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ABSTRACT

College and University Environments Scales (CUES), an instrument for characterizing the perceived atmosphere of institutions of higher education, was published by the Educational Testing Service in 1963. CUES is probably the most widely used instrument for describing college environments. The purposes of this study were to: (1) provide more adequate national norms--documenting the range of institutional diversity on each of the items and scales in CUES and the varieties and major types of profiles; (2) undertake a thorough reanalysis of CUES items and scales and other psychometric properties of the instrument; (3) establish a wider network of relationships between CUES scores and a variety of other institutional characteristics; and (4) give the National Opinion Research Center (NORC) information about college environments which would enable them to probe more deeply into the determinants of educational and career choices of college students. One hundred institutions served as a national reference group for the psychometric studies. Eight types of environments were identified. The psychometric properties of the current edition of CUES were found to be generally adequate but capable of improvement. (AF)

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Final Report

ANALYSES OF A NATIONAL SAMPLE OF COLLEGE ENVIRONMENTS

Project No. 5-0764
Contract No. OE-5-1-321

By C. ROBERT PACE

U.S. DEPARTMENT OF HEALTH, EDUCATION
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C. R. P.

INTRODUCTION

College & University Environment Scales (CUES), an instrument for characterizing the perceived atmosphere of higher institutions, was published by Educational Testing Service in 1963. The instrument was an outgrowth of previous analyses, made by the author, of the College Characteristics Index (CCI). In 1958-59, the CCI had been used by some 50 or 60 institutions, and from these reports a tentative norm group of 32 colleges and universities had been selected. When the data were analyzed to show the major dimensions along which institutions differed, using the mean score of institutions as the unit of analysis rather than scores of individual students, four factors, or directions of environmental press, seemed to emerge: an intellectual, humanistic, esthethic press; a friendly, group welfare press; a scientific, independent press; and a practical, status-oriented press (15). During the years 1960-62, as CCI data from more institutions became available, it became possible to base analyses on a better cross-section of institutions and thus to see more clearly the ways in which institutions differed. These analyses led to the development of CUES, replacing the CCI. About half of the CCI items were found to be non-functional in the sense that they failed to discriminate between institutions, and the items which did discriminate fell along five dimensions subsequently labeled Practicality, Community, Awareness, Propriety, and Scholarship. With the publication of CUES by ETS many more institutions as well as individual researchers became interested in studies of college environments.

It seems reasonable to say that CUES has further stimulated the curiosity of researchers and educators. It has apparently tapped concepts and variables which social scientists have wanted to deal with but have heretofore lacked the instrumentation for doing so. Moreover, the initial promise of the CCI, and its subsequent realization in the clearer structure of CUES, stimulated other social scientists to explore other ways of characterizing college environments. Over the past ten years a substantial literature has developed around concepts and measures of the college environment [Pace and McFee (22); Pace (16); Michaels (14)]. In the fall of 1966, the present writer prepared an article on the college environment for inclusion in the Fourth Edition of the Encyclopedia of Educational Research, scheduled for publication in January 1969. This is a new topic for the Encyclopedia, and its appearance testifies to the salience this line of research has attained in the past decade.

Basically, one can identify four systematic approaches to the description and measurement of college environments. The initial concept, illustrated by the work of Pace and Stern (23), Pace (16), Thistlethwaite (26), Kirk (10) can be described as the collective perception or image approach. What do people perceive as characteristic of the environment? A second approach, illustrated by the work of McConnell and Heist (12), Astin and Holland (4), Trow (28), asks a different question: What kind of people live in the environment? The assumption here is that students make the college, and that by knowing the characteristics of students one can infer the characteristics of the environment. A third approach is a demographic one. What demographic features are characteristic of the environment? Features such as size, money, library resources, proportion of men and women, faculty-student ratio, etc. are examples. Astin (1) and Richards(25) have used this approach. A fourth kind of question has been: How do people behave in the environment? The most recent studies of Astin (3), and the earlier participant-observer methods of Becker (5) illustrate this approach. As alternative approaches have been used, the investigators have compared their results with those obtained from the CCI or CUES, using such comparisons as partial evidence for the validity of their methods. To some extent, then, the CCI and CUES have served as a central reference for much of the research over the past decade. Although each approach produces some unique results, the similarities in conclusions obtained by various methods are quite apparent. All of the investigators find dimensions or scales which have some similarity to one or more of the five scales in CUES--the magnitude of these similarities being expressed by correlations in the .40s to .60s.

Regardless of the method of inquiry, the accumulated results show very clearly that college environments differ greatly from one another. In educational and psychological research there is ample evidence that different treatments produce different results, that different stimuli produce different responses. Rather commonly, when significant differences are not obtained, the treatments have not been substantially different in the first place, or the outcome measures have been only partially relevant to the differential treatments. It is not surprising that large significance is rarely found in small phenomena. College environments, however, are large phenomena ; and the differences between them are also demonstrably large. Theoretically, the effects of such different environments should be easily documented by empirical studies. In a study of nine colleges, the present writer (17) demonstrated that students' attainments of relevant objectives was definitely related to the environmental press of the college and, to a lesser extent, to the press of subcultures within the college. Two recent dissertations at UCLA [Dean (8); Fisher (9)] showed that the magnitude of entering students' misperceptions about the environment was clearly related to how well they subsequently liked the environment, and to the frequency with which they experienced some difficulty in adapting to it. A similar finding was reported by Pervin (24). In the NORC studies, students' career plans were influenced by certain aspects of the college environment [Davis (7)]. Similar college effects were also shown by Thistlethwaite (27). Most of these studies have used limited criteria--such as students' plans to enter graduate school; or have used self-report data--such as students' estimated progress toward various objectives, or estimated satisfaction with college. Until there are large-scale studies, using criterion measures relevant to a variety of educational objectives, the full impact of different environments on different students cannot be adequately demonstrated. One might add, too, that measures of the environment which are based upon projections from the characteristics of students cannot really be used to sort out the relative influence of personality vs environment upon subsequent outcomes. CUES, as a measuring instrument, is relatively free of this kind of contamination. What students collectively perceive to be characteristic of their college environment has little or no relationship to the personal characteristics of the students themselves [Pace (18); McFee (13)].

Any national assessment of the effectiveness of higher education must deal, somehow, with at least three fundamental problems: first, the diversity of objectives and purposes across the full range of higher institutions, necessitating a set of criterion or outcome measures which properly reflect and acknowledge this diversity; second, the differences between college environments, necessitating the use of suitable measures for describing and classifying some of the major ways in which educational treatments differ from one another; and third, the range of student abilities, backgrounds, interests, and aspirations, necessitating the use of test data and other information to identify what kinds of students are given what kinds of treatments, and attain what kinds of objectives. The present study is addressed to the second of these three fundamental problems.

Purposes of the Present Inquiry

The present study is not a research project in the usual sense of testing some hypothesis. Rather, it is basically a normative survey. Since CUES is probably the most widely used of the current instruments for describing college environments, the norms which can be provided, and other guidelines which might aid in its interpretation, are of some consequence to many people, both educators and researchers. Conclusions about higher education, based on any such instrument, depend on the goodness of the instrument itself. The first purpose of the study, then, is simply to provide more up-to-date and more adequate national norms--documenting more fully the range of institutional diversity on each of the items and scales in CUES and the varieties and major types of institutional profiles.

The second purpose is to undertake a thorough reanalysis of CUES items and scales and other psychometric properties of the instrument. It is important to know, for example, whether the present scales, derived initially from factor analyses and item-criterion correlations in a group of 50 institutions that had used the CCI, can be cross-validated. Do the same factors emerge? Are some items no longer useful? How reliable are the scores? Should the scoring system be modified? Should new items be introduced? The purpose here is simply to improve the instrument as a measure, to the extent that improvement is warranted.

The third purpose is to establish a wider network of relationships between CUES scores and a variety of other institutional characteristics. This is an exploration of CUES validity and thus of its interpretation.

A fourth purpose is to give the National Opinion Research Center information about college environments which will enable them to probe more deeply and significantly into the determinants of educational and career choices of college students. By adding CUES data to the wealth of information accumulated by NORC, one can enable NORC to study the informal environmental influences on students' choices in relation to such other potential influences as student characteristics, social backgrounds, and the formal organizational aspects of the colleges.

METHOD

Selection of Institutions to be Studied

The National Opinion Research Center had undertaken two large surveys of the educational and career plans of college students, and had published results from the first of these surveys under the title of Great Aspirations at the time the present research project was undertaken. A second survey had just been made. The first was addressed to the June 1961 graduates of a cross-section of 135 colleges and universities. The second survey was of the June 1964 graduates of 200 institutions. Since a great deal of information was known about both the students and the institutions included in these NORC surveys, and since both surveys included a great variety of institutions, the present survey of college environments would obviously be enriched by using many of these same institutions so that the previously collected NORC data could be utilized along with the new data from CUES. At the same time, the NORC staff had indicated a special desire to add to their pending analyses the kind of information about college environments which the responses to CUES items could provide. An agreement was made to share data with NORC.

There were 313 different schools included in the two NORC surveys, some schools having been included in both studies. Among these 313 there was a special sub-set of Negro schools which were eliminated from the present study. Also, there were a few others which were deliberately omitted for special reasons (for example, the University of Puerto Rico, one Hebrew teachers college, etc.). There remained 260 to be considered. Of the 260, responses to CUES items had previously been obtained from 45, and there were an additional 11 from which data were expected through other sources, leaving 204 from which data would be sought in the present survey. Actually, invitations to participate in the national study of college environments were sent to 193 colleges and universities. Of this number, 124, or 64 per cent, did participate by administering CUES to a sample of their students. Since we already had data on 45 of the NORC sample schools, the addition of 124 made a total of 169 out of 260, or 65 per cent.

The present study was not limited to schools from the NORC samples. Rather, the NORC list was used as the primary source for collecting additional data. We already had in our files reports from 59 other colleges and universities, and these schools along with still others obtained during the year gave a grand total of 237 to use in subsequent analyses.

Selection of Samples of Students

The letter inviting participation in the national survey of college environments and other material describing the terms of participation and suggesting procedures for obtaining samples of students, are reproduced in the Appendix. Briefly, the invitation material specified the number of CUES booklets and answer sheets that would be sent to the institution; indicated the minimum number of students to be tested; required the school to obtain a reasonable cross section of students (excluding freshmen or recent transfer students) drawn from the sophomore, junior, or senior classes, preferably upperclassmen; and further specified that they be selected so as to include men and women in a representative fashion; and, for the complex schools, to include a proportionate number of students from different major academic programs such as Engineering, Business, Liberal Arts, etc.

The number of students to be tested was related to the size of undergraduate enrollment. Enrollment figures were obtained from directories, and the following categories were arbitrarily drawn:

Undergraduate Enrollment	Number of Students to be Sampled
Under 1000	50 to 75
1000 to 5000	75 to 150
5000 to 10,000	150 to 225
Over 10,000	225 to 350

In all of the 124 colleges and universities that were invited to administer CUES, and did so, the number of cases obtained was within the range noted above. A report form to be filled out by the school representative and returned with the completed answer sheets provided space to describe how the students were selected. Most commonly, the tests were administered to students in a selected cross-section of courses, a selected cross-section of living units, or mailed to a random cross-section. There were no instances in which the students tested could be regarded as clearly unrepresentative. Altogether, in the 124 colleges and universities, responses were obtained from 15,286 students.

The participating schools ordered the required materials from Educational Testing Service and returned the completed answer sheets to ETS for scoring. After the tests were scored, the school received from ETS a print-out showing for each item the per cent of students answering it in the keyed direction, and the score for each of the five scales in CUES. Along with the test booklets, ETS also sent a copy of the CUES manual so that the participating schools had normative information for interpreting the results. A copy of the ETS print-out was sent to National Opinion Research Center and to UCLA.

Preliminary Psychometric Studies of CUES

Approximately two-thirds of the 124 schools in the NORC sample which ultimately participated in the study administered CUES to their students in the Spring of 1965. Some of these results, along with data from schools not in the NORC sample, were available for preliminary study in the Summer of 1965.

Our initial concern was simply to note whether the distribution of scores on the various scales was generally similar to the distributions obtained several years ago from the 50 schools used for norms in the CUES preliminary technical manual. We discovered that on most scales--Community, Propriety, Awareness, and Scholarship--the new scores were characteristically lower than the ones obtained for the earlier sample of schools, resulting in distributions which tended to pile up at the lower end, and mean scores which, instead of being 10 or 11 points, were now 8 or 9 points. The results, of course, might be due to some differences in the types of schools; and, in fact, the new data included a heavier representation of State Colleges, and large, but not highly selective, public universities, than had previously been available. This led to experimenting with an alternative method of scoring CUES, in the hope that a better spread of scores would be obtained. Instead of counting only those items which were answered by a consensus of two to one or greater in the keyed direction--the so called 66%+ method of scoring--we counted all items which were answered by a two to one majority in the keyed direction and also in the opposite direction, then adding a constant to eliminate negative scores. This produced a substantially better distribution and we subsequently decided to incorporate this new scoring method when a revised edition of CUES is produced.

Our main concern in the preliminary studies was to learn more about the extent to which college and university environments might be grouped into several more or less homogeneous types. If there were such types, then the ultimate selection of schools for a new norm group should reflect them. Using computer programs developed by Dr. James MacQueen (11) we analyzed three sets of data. The data consisted simply of the five CUES scores for each school; and the program was designed to identify profile similarities. Basically, the computer program takes the first profile (set of five scores) presented to it and then identifies other profiles that are within any specified distances from it; when no other profiles qualify for the first cluster, a new cluster is started, with the program continuing until a previously specified number of groups are identified. This type of computer program was used, with alternatives in the specifications, on the 77 schools having new CUES data, also on a total group of 174 schools which included many from which data had been obtained in previous years, and finally on this same large group with 30 junior colleges added. On some of the program variations, the number of clusters was gradually reduced so that one could see which institutions shifted to any new group. Also, on some of the programs, a similarity index was produced for each school within a cluster so that we could see which schools were most and least like the modal school in the cluster. Altogether five sets of cluster analysis output were studied.

The results of these preliminary cluster analyses are summarized in the present section on "Methods" because they are prerequisite for explaining later the method for selecting the final list of 100 colleges and universities that were used for developing new norms, and all other psychometric studies of CUES. In all the cluster programs there emerged a group consisting primarily of highly selective, private, non-sectarian, liberal arts colleges--such as Vassar, Bryn Mawr, Wesleyan, Williams, Pomona, Oberlin, Antioch, Reed, etc. Overlapping occasionally with this group so far as specific schools were concerned, was a second cluster consisting primarily of highly selective universities, public and private--such as Princeton, Johns Hopkins, Michigan, Wisconsin, ULCA, etc. A third cluster which always emerged with reasonable clarity was composed mainly of schools having dominant programs in engineering and sciences--such as Carnegie Tech, Harvey Mudd, Purdue, South Dakota Mines, Illinois Institute of Technology, etc. A fourth type which usually grouped together was mostly composed of small strongly denominational schools--such as many Catholic women's colleges, and colleges affiliated with minor rather rather than major Protestant sects (Mennonite, Evangelical Lutheran, Southern Baptist, Churches of Christ, etc.). Some other liberal arts colleges, and occasionally a teachers college, fell into this group, but its main component was always the strongly denominational emphasis. A fifth group, less clear than the previous four, typically consisted of teachers colleges, assorted liberal arts colleges, and some State Colleges. For the most part, some emphasis on teacher training programs provided the common denominator. When junior colleges were added to the input, most of them emerged in a common cluster. The above five (or six) if junior colleges are counted) clusters usually accounted for about half of the institutions in the different samples studied. The remainder, consisting of what we later came to describe as general universities, general liberal arts colleges, and State Colleges, grouped themselves in various ways depending in part on how many clusters the computer program was instructed to form. In one of the program outputs there were two clusters composed chiefly of assorted schools from the Southern states, and to some extent of universities (not highly selective) in non-metropolitan areas. In another program, designed to produce 12 clusters, one was mainly Southern state colleges plus five Southern teachers colleges, a second was mainly non-metropolitan universities and State Colleges not in the South, and a third was a composite for which no general characteristic could be ascribed.

From the cluster analyses, however, we saw that at least five fairly homogeneous types always emerged (six if junior colleges are added); and concluded that these types should certainly be considered in ultimately chosing a new norm group for CUES, for they represented distinctive classes of American colleges and universities.

Selection of a National Reference Group

After data had been received from all 124 schools on the NORC list which had agreed to administer CUES, and adding to this number other schools which had administered CUES during 1964 or early 1965 and from which we had received reports, there were approximately 175 institutions to draw upon in developing a new reference group for the further analysis and interpretation of the test.

In the initial CUES manual, the norm group was built around the following categories or stratifications--four geographic areas (Northeast, South, Midwest, and Mountain and Far West); three levels of program (USOE types II, III, and IV: i.e. BA only; BA, MA and first professional; and BA, MA, PhD and advanced professional); and public and private control. Then, the number of institutions in each cell was approximately proportionate to a national distribution of enrollments: for example, if half of all college students are in large complex universities (USOE type IV), then half of the institutions in the norm group should be large complex universities. The alternative procedure would have been to use a national distribution of institutions as the guideline, in which case most schools in the norm group would be small liberal arts colleges and relatively few would be large complex universities.

For the new norm group we decided to use a compromise between these two procedures. We took as a baseline the national population of four-year accredited institutions (omitting junior colleges, non-accredited schools, and other special cases such as military academies). Then, using the categories of region, level, and form of control, we determined how many schools out of 100 would fall in each cell of this grid under two different conditions--i.e. to be representative of institutions and to be representative of enrollments. The resulting distributions are shown in Table 1. At levels II and IV the two distributions are almost

Table 1

Theoretical Distribution of Colleges and Universities--Representative of Institutions and Representative of Enrollments

	Northeast		Midwest		South		Far West		Totals			
	I	E	I	E	I	E	I	E	I	E		
Type II												
Public	2	1	1	1	3	2	0	0	6	4	53	16
Private	13	3	17	4	12	4	5	1	47	12		
Type III												
Public	3	6	3	3	4	6	2	4	12	19	31	32
Private	7	6	5	3	4	2	3	2	19	13		
Type IV												
Public	1	7	2	13	3	9	2	7	8	36	15	52
Private	4	10	1	2	1	2	1	2	7	16		
Total												
Public	6	14	6	17	10	17	4	11	26	59		
Private	24	19	23	9	17	8	9	5	73	41		
Grand Total	30	33	29	26	27	25	13	16	99	100		

I = Desired number if sample is representative of institutions

E = Desired number if sample is representative of enrollments mirror images of one another. To be representative of the number of institutions in the country, there would be 53 at level II and 15 at level IV. To be representative of a distribution of enrollments, there would be 16 institutions at level II and 52 at level IV. With respect to the number of public and private institutions there are also large differences depending on which basis for representation is used. Neither basis can be defended as the the only proper one to use in determining a norm group for college environments. It can be argued, however, that a norm group for an instrument such as CUES should include a reasonable number of every major type of environment so as to provide a maximally reliable basis for studying institutional differences.

The objective, as we saw it, was to select a national assortment of colleges and universities that would reflect a broad cross-section of American higher education--from all parts of the country, large and small, public and private--and would at the same time include representative institutions for each of several categories or types which are known to differ substantially from one another. What institutions should be included in such a baseline is a question to which there is no one right answer; and the common practice of drawing a random sample really begs the question. The word baseline, rather than sample, suggests a crucial difference in point of view. In economics, for example, the Gross National Product or the Cost of Living Index or the Dow-Jones averages are not based on a national sample of anything; instead they are based on a rationally selected set of categories which presumably represent significant elements of the economy. The result is not a sample; it is a baseline or standard reference. This is precisely what we attempted to do in developing a new norm group for CUES.

From the cluster analyses described previously we decided that eight general types or categories of institutions must be represented in a national reference group. Since we ultimately wanted to examine the homogeneity within types and also the differences between types, we arbitrarily decided that for a total norm group of 100 institutions, we should have at least ten institutions in each category. This still enabled us to have 20 institutions in the two largest categories. Then, within this limitation of the eight categories we would select schools in such a way--by region, level, and form of control--that the resulting national distribution would approximate a mid-way compromise between the institutional and enrollment distributions shown in Table 1. The extent to which the final selection of 100 institutions met this compromise is shown in Table 2. The compromise or desired numbers in each cell are simply the average of the two numbers in the corresponding cells of Table 1. These compromise numbers are compared,

Table 2

Desired Compromise Distribution and Obtained Distribution for a National Reference Group of College Environments

	NE		MW		S		FW		Total			
	C	O	C	O	C	O	C	O	C	O		
II												
Public	1.5	1	1	0	2.5	1	0	0	5	2	34.5	28
Private	8	6	10.5	11	8	5	3	4	29.5	26		
III												
Public	4.5	3	3	5	5	5	3	3	15.5	16	31.5	34
Private	6.5	6	4	7	3	2	2.5	3	16	18		
IV												
Public	4	3	7.5	8	6	6	4.5	6	22	23	33.5	38
Private	7	9	1.5	4	1.5	1	1.5	1	11.5	15		
Total												
Public	10	7	11.5	13	13.5	12	7.5	9	42.5	41		
Private	21.5	21	16	22	12.5	8	7	8	57	59		
Total	31.5	28	27.5	35	26	20	14.5	17	99.5	100		

C = Desired number if sample is a midway compromise between a distribution of institutions and a distribution of enrollments.

O = Obtained number used in national baseline for CUES norms.

in Table 2, with the numbers actually obtained and used in the national reference group for the present study. The compromise numbers and obtained numbers are, with very few exceptions, very close to one another.

The eight categories, and the specific institutions in each, are listed below:

(SLA) 10 Highly Selective Liberal Arts Colleges

- Oberlin
- Radcliffe
- Antioch
- Earlham
- Williams
- Pomona
- Cornell
- Chatham
- Beloit
- Reed

(SU) 10 Highly Selective Universities--Public and Private

- Clark
- Johns Hopkins
- UCLA
- Pennsylvania
- North Carolina
- Princeton
- Wisconsin
- Michigan
- Washington (St. Louis)
- Stanford

(GLA) 20 General Liberal Arts Colleges

- Knox
- Albion
- Lake Erie
- Oglethorpe
- Birmingham Southern
- Blackburn
- Lycoming
- Washington and Jefferson
- Colgate
- Lafayette
- Mary Washington
- Rollins
- Monmouth
- Lambuth
- Westmont
- Wittenberg
- Simons
- Ripon
- Denison
- Colby

(GU) 20 General Universities--Public and Private

- St. Louis
- Kansas State (Manhattan)
- Rutgers
- Tulane
- Utah
- Howard
- Oregon
- Penn State
- Wayne State
- Northwestern
- St. Lawrence
- Nebraska
- Georgia
- Colorado
- Michigan State
- Texas Christian
- Alabama
- New Hampshire
- South Carolina
- Wyoming

(SC) 10 State Colleges and Other Universities

Western Michigan
Texas Western
Memphis State
Mississippi State
Oregon State
San Diego State
Brooklyn College
San Francisco State
Texas Technological
La Salle (Philadelphia)

(TC) 10 Teachers Colleges and Others with Major Emphasis in Teacher Education

Kansas State (Emporia)
Slippery Rock
Montclair
Central Connecticut
Troy
Ball State
Marshall
Eastern Oregon
Southeastern State College (Oklahoma)
State College of Iowa (Cedar Falls)

(Den) 10 Strongly Denominational Liberal Arts Colleges

Oklahoma Baptist
Pepperdine
Bluffton
Susquehanna
Manchester
St. Catherine
Manhattanville
Carroll
Mount St. Marys
Spring Hill

(ES) 10 Engineering and Sciences

Purdue
Illinois Institute
Harvey Mudd
South Dakota Mines
Brooklyn Polytechnic
Iowa State (Ames)
Carnegie Tech
Wabash
Rose Polytechnic
Rensselaer

The total number of students tested at these 100 institutions was 15,395.

Further Psychometric Studies of CUES

All subsequent analyses of the test are based on the data from the above group of 100 institutions. The results of those analyses are described in the next section. The following studies were made:

1. Factor analysis of items within each of the five scales (BiMed 03M, Kaiser Verimax Rotation to 8 factors).

2. Factor analyses of the total test--divided into equivalent thirds. (Same program as above.)

3. Item discrimination studies: Correlation of all items with each of the five scale scores, and by two different scoring methods.

4. From the above analyses, selections of items to be retained in the revised test. At this point, the 150 items were reduced to 100 items, divided into five scales of 20 items each.

5. Rescoring the 20-item scales, using the revised method of scoring.

6. Final item discrimination studies: Correlation of all items with each of the five revised scale scores.

7. Final factor analysis (same program as above) of the total test divided into equivalent halves.

8. Development of norm tables (percentiles) for the revised test.

9. Graphic representation of score ranges for each of the eight types of institutions.

10. Selection of new items for tryout in the revised edition of CUES.

Validity Studies

NORC provided us with the aggregate student responses from all institutions in their studies--both for the 1961 survey and the 1964 survey. We correlated these data with CUES scores in two separate samples--first with however many schools in our reference group of 100 were also in either of the NORC surveys, and second, with all institutions for which we had common data. In addition, we correlated CUES scores for all 100 of our reference group with the EAT input and environmental variables published in Astin's book, Who Goes Where to College? (2). Further, for all schools which reported Scholastic Aptitude Test scores in the College Board's Manual of Freshman Test Profiles (1964) and which were also in our group of 100, we correlated CUES scores with SAT Verbal scores. And finally, for all colleges which had been included in Astin's (1) study of institutional characteristics and were also in our sample, we correlated CUES scores with Astin's factors. All these relationships, totalling several hundred correlations, constitute a significant expansion of the validity network for CUES.

RESULTS

Psychometric Data

The re-study of CUES as a measuring instrument led to the following decisions: 1) to retain the five basic scales of the present instrument, 2) to improve the psychometric properties of these five scales by eliminating the weakest items, shortening the test from five 30-item scales to five 20-item scales, and 3) to use a revised system of scoring. The data which led to these decisions are presented in this section, followed by a report of thepsychometric properties of the revised test.

In the preliminary technical manual for CUES, the method of obtaining an institution's score on each of the scales is simply to count the number of items answered in the keyed direction by a consensus among the respondents of two to one or greater. Thus any item about which 66 per cent or more of the students agree (in the keyed direction) is counted in the score. The logic of CUES is to identify the collective perception of qualified reporters about what is and is not characteristc of the environment. The two to one consensus (or 66%+ method of scoring) is an arbitrary dividing line, saying in effect that in order to regard a condition as "characteristic" there should be at least this much agreement about it. The distribution of scores of the 48 schools reported in the preliminary CUES manual was such that the median scores on the five scales were 11, 11, 12, 10, and 11. The distribution of scores for the new reference group of 100 schools, however, showed median scores of 9, 11, 10, 7, and 9. Our hope had been that the new medians would be higher than the previous ones. Especially for the Propriety scale, with a median of seven points, the ability of the test to discriminate at the lower end of the distribution was seriously reduced. The possibility of a different method of scoring was suggested in the CUES preliminary manual--namely to count items about which there was a two to one consensus in the direction opposite to the key as well as those about which there was a two to one consensus in the keyed direction. This was referred to as the "66 plus and 33 minus" method of scoring. Looking at the item percentages on the Propriety scale for some of the schools in the new reference group it was apparent that there were some schools in which many items had been answered in the non-keyed direction by two-thirds or more of the respondents. By considering these items in the scoring system, the distribution of scores would presumably have a better spread; and the piling up of scores at the low end of the scale would be eliminated. So, we used two methods of scoring in our initial item discrimination studies--the 66+ method and the 66/33 method. The latter scores were obtained as follows:

1. Number of items answered 66 per cent or higher in the keyed direction;
2. Minus number of items answered 66 per cent or more in the opposite direction;
3. Plus a constant of 20 points (to eliminate minus scores).

Table 3 compares the distribution of scores of the 100 schools in the reference group obtained by these two scoring methods. It is quite apparent that the shape of the distribution, on all scales, is better when the 66/33 scoring method is applied to the data.

Both of these scores were used as criteria for determining item discrimination indexes. The item-scale score correlations are shown in Table 4. The table shows that every item in each of the five scales correlated positively with both criterion scores, with no correlation being lower than .20. In other words, every item in each scale was discriminating among the 100 schools in the same direction as the scale scores. Against the 66+ scores, a total of 15 of the 150 items had correlations below .40 in the scale to which they presumably belonged; against the 66/33 scores there were 13 such items.

Table 5 shows that some items in each scale had higher correlations with other scales. Of the 30 Practicality items, 22 correlated highest with the Practicality scale scores; but two correlated highest with the Community scale, three with the Awareness scale, two with the Propriety scale, and one with the Scholarship scale. The table also shows that, regardless of which criterion was used (66+ scores, or 66/33 scores) the results are approximately the same. By the 66/33 method there are 121 items having the highest correlation in the scale to which they belong. By the 66+ method there are 117 such items.

Table 6 shows the median correlations of items with each scale, for both scoring methods. For example, by the 66/33 method, the 30 items in the Practicality scale had a median correlation of .60 with the Practicality scale score, a median correlation of .20 with the Community scale score, -.27 with Awareness, .04 with Propriety, and -.38 with Scholarship. Looking at both parts of the table, and at the correlations of items with their own scale, one sees that the 66/33 scoring method gives higher correlations in the case of the Practicality, Community, and Awareness scales, lower in the case of the Scholarship scale, and that there is no difference on the Propriety scale. In this respect the 66/33 scoring method is slightly preferable. In a pattern of intercorrelations such as this, another relevant criterion is the extent

Table 3

Distribution of CUES Scores by Two Different Scoring Methods

Score	Pract	Comm	Awar	Prop	Schol	Score	Pract	Comm	Awar	Prop	Schol
30						59-60					1
29					1	57-58			1		
28					1	55-56		2	4		2
27			2			53-54			2		
26		2	2		2	51-52		3	3		6
25		1	2			49-50	3	5	2		4
24		1	3		1	47-48	4		2	5	5
23		2	1		1	45-46	1	3	6	2	5
22		1	2		3	43-44	4	4	2	1	3
21		3		3	3	41-42	6	8	6	6	3
20	2		2	2	2	39-40	3	12	4	1	11
19	2	2	3		5	37-38	7	7	10	4	6
18	4		2	2	1	35-36	11	6	9	3	4
17	3	3	3	3	1	33-34	10	7	7	7	7
16	4	4	4	2	3	31-32	7	10	7	9	7
15		4	1	2	2	29-30	8	8	7	6	5
14	2	3	1	2	2	27-28	6	4	3	9	6
13	5	10	6		3	25-26	5	3	6	12	7
12	2	6	2	3	6	23-24	2	4	6	11	4
11	10	9	9	1	6	21-22	5	3	5	3	7
10	10	5	4	3	3	19-20	3	5	3	5	2
9	8	5	4	5	3	17-18	5	2		7	1
8	9	11	3	11	7	15-16	2	1	2	2	2
7	6	7	13	9	3	13-14	4	1	1	3	
6	6	8	9	14	12	11-12		1	2	2	1
5	6	5	6	5	9	9-10	2				3
4	6	4	5	7	3	7-8	1	1			
3	5	1	6	9	6	5-6					
2	6	2	2	5	5	3-4	1				
1	1	1	3	4	5	1-2					
0	2			2	1	0					

Table 4

Distribution of Correlations between Items and Scale Scores in Two Different Methods of Scoring

	Practicality		Community		Awareness		Propriety		Scholarship		Number of Items below .40	
	66+	66/33	66+	66/33	66+	66/33	66+	66/33	66+	66/33	66+	66/33
Correlations												
.90									1			
.80			4	3	4	2	1	1	8	8		
.70	1	6	5	9	9	9	7	7	8	9		
.60	8	9	8	4	9	11	6	5	6	5		
.50	12	7	3	7	4	4	7	6	4	4		
.40	7	6	4	3	3	3	3	5	3	4		
.30		1	2	3	1	1	4	5			15	13
.20	2	1	4	1	–	–	2	1	–	–		
Number of Items	30	30	30	30	30	30	30	30	30	30		
Median	55	60	62	62	68	66	59	57	72	72		

Table 5

Location of Highest Item-Scale Score Correlations

66/33 Scores

Items	Scales					
	Practicality	Community	Awareness	Propriety	Scholarship	N
Practicality	22	2	3	2	1	30
Community	4	22	3	1		30
Awareness			27		3	30
Propriety		3	2	23	2	30
Scholarship	1	1	1		27	30

66+ Scores

Items	Scales					
	Practicality	Community	Awareness	Propriety	Scholarship	N
Practicality	21		5	1	3	30
Community	8	18	1	2	1	30
Awareness			29		1	30
Propriety		3	2	23	2	30
Scholarship		1	3		26	30

Table 6

Median Correlation of Items with Their Own Scale Score and with Each of the Other Scale Scores

30 Item Scales, Scored by 66/33 Method

Items	Scales				
	Practicality	Community	Awareness	Propriety	Scholarship
Practicality	.60	.20	-.27	.04	-.38
Community	.21	.61	.04	.36	-.01
Awareness	-.29	.06	.67	-.01	.46
Propriety	.01	.37	.00	.57	.07
Scholarship	-.45	.05	.46	.06	.70

30 Item Scales, Scored by 66+ Method

Items	Scales				
Practicality	.54	.06	-.34	-.02	-.40
Community	.30	.58	.04	.42	.04
Awareness	-.17	.16	.66	.06	.46
Propriety	.04	.38	.02	.57	.11
Scholarship	-.29	.21	.56	.20	.71

to which the correlations between scales are increased or decreased. One hopes to obtain high correlations within scales, but generally low correlations between scales. Comparing the two parts of the table, one finds that the intercorrelations are lower for the 66/33 scoring method in 14 instances, higher in four instances, and the same in two instances than for the 66+ scoring method. Thus, again, the 66/33 scoring method is psychometrically preferable.

Tables 4, 5, and 6 all indicate that some improvement in the test could be made by eliminating a few items--items with low item criterion correlation, items which correlate higher with a scale other than the one in which they are located, and items whose removal might help to reduce the magnitude of intercorrelation between some of the scales. At the same time, it is clear that the basic structure around which the test was developed does not need to be modified; for most items correlate highest where they are supposed to, and all items are positively discriminating in the scale to which they are originally assigned.

Further information about the test items was obtained from factor analyses. No factor analysis of CUES items had previously been made. The dimensions or scales in the present instrument were derived from factor analysis of CCI scale scores, not from factor analysis of the individual test items. When the item responses are factored, will the same, or basically similar factors, be produced? Since the population of institutions was 100 and since there are 150 items in CUES, we broke the test into equivalent thirds for analyses, making 50 variables (items) and 100 schools for each analysis. These were not random thirds. The 30 items in a scale were sorted into three groups of 10 items each in a way which made each group approximately similar with respect to item content and the distribution of item marginals. For each set of 50 items (10 items from each of the five scales) the computer program was instructed to continue until eight factors had been produced (Kaiser Verimax method).

Table 7 indicates, for each factor analysis, the location of all items with .40 loadings or higher. In the analysis of the first set of items, for example, there were 15 items having loadings of .40 or higher on the first factor. Nine of these 15 items were from the Awareness scale. The second factor was defined by 10 items having loadings of .40 or higher, of which nine of the 10 came from the Community scale. The third factor had nine items with .40 loadings or higher, of which six were from the Propriety scale. The fourth factor, with seven items, had five from the Practicality scale. The fifth factor was defined by 14 items, of which 10 came from the Scholarship scale. The remaining three factors consisted of miscellaneous items. Thus, of the five definable factors produced from the analysis of the first equivalent

Table 7

Location of Items with .40 Loadings or Higher

	Factors							
First Equivalent Third	1	2	3	4	5	6	7	8
Practicality items		1	2	⑤	2	2	1	
Community items	1	⑨	1	1	2		1	
Awareness items	⑨							
Propriety items	1		⑥	1			1	1
Scholarship items	4	_	_	_	⑩	1	_	1
Total	15	10	9	7	14	3	3	2
Second Equivalent Third	1	2	3	4	5	6	7	8
Practicality items	3	2	⑥	1	4			1
Community items	1	2	3	⑤			1	1
Awareness items	2			1	⑦	1	1	1
Propriety items		3	1	4		1	2	⑥
Scholarship items	⑤	1	_	1	1	3	⑤	_
Total	11	8	10	12	12	5	9	9
Third Equivalent Third	1	2	3	4	5	6	7	8
Practicality items	4	1	⑥		2	1	2	
Community items		5	3	⑥				
Awareness items	⑨	1		1				1
Propriety items	1	⑥	1	1			1	2
Scholarship items	3	_	_	1	⑦	2	_	_
Total	17	13	10	9	9	3	3	3

third of the test items, it is clear that these factors consist predominantly (71 per cent) of items from the same scales around which the test was originally organized.

When the data for each of the three factor analyses are added, putting together from each of the thirds those factors which are clearly similar, the following results are obtained, as shown in Table 8. No other combination of factors from the three analyses will produce a more concentrated or readily discernable pattern; and the pattern which does emerge is more similar to than different from the basic pattern of the original test. In the five main factors from the new analyses, 60 per cent of the items with .40 loadings or higher reflect the original five factors; but this leaves 40 per cent which do not. There were, of course a number of items which had loadings of .40 or higher on more than one factor.

A sharper picture of the new factor analyses is seen in Table 9, where the location of only the highest factor loadings is reported. For example, in the first analysis, six of the 10 items from the Practicality scale had their highest loadings on the "Practicality" factor. From the summary of the three analyses at the bottom of the table, the original Awareness items provide the clearest definition of the "new" Awareness factor, since 25 of the 30 items had their highest loading on this factor. The original Practicality items are the least satisfactory, with 16 of the 30 having their highest loadings on what seems to be the "new" Practicality factor. Overall, 102 of the 150 items, or 68 per cent, have their highest loadings in a factor which is congruent with their original location in the first edition of CUES.

Having seen that two thirds of the test items fall into one or another of the same five factors that characterized the original test structure, we then looked at each of the five scales separately to see how much of each scale was comprised of a single dominant factor. To do this, the 30 items within a scale were factored (Kaiser Verimax to eight factors). The largest factor on each of the five scales, with largest defined as the number of items having loadings of .40 or higher with it, typically included 40 per cent to 50 per cent of all the items, as the following figures show:

Table 8

Summary of Items with .40 Loadings or Higher

	First One-third		Second One-third		Third One-third				
Factor	1	+	5	+	1	=	25 Awareness items,		
							out of 44 items	=	57%
Factor	5	+	1 and 7	+	5	=	27 Scholarship items,		
							out of 43 items	=	63%
Factor	2	+	4	+	4	=	20 Community items,		
							out of 31 items	=	65%
Factor	3	+	8	+	2	=	18 Propriety items,		
							out of 31 items	=	58%
Factor	4	+	3	+	3	=	17 Practicality items,		
							out of 27 items	=	63%
			Total				107 out of 176 items	=	60%

Table 9

Location of Highest Factor Loadings

	Practicality	Community	Awareness	Propriety	Scholarship	Other	Total
First Equivalent Third							
Practicality items	6		2		1	1	10
Community items	3	5		1		1	10
Awareness items		1	7			2	10
Propriety items			1	6		3	10
Scholarship items		1			7	2	10
Second Equivalent Third							
Practicality items	4	1		1	1	3	10
Community items		9	1				10
Awareness items			9			1	10
Propriety items	1		1	6		2	10
Scholarship items					10		10
Third Equivalent Third							
Practicality items	6		2	1		1	10
Community items		6		4			10
Awareness items			9			1	10
Propriety items	1	1	1	6		1	10
Scholarship items			2		6	2	10
Sum of Thirds							
Practicality items	16	1	4	2	2	5	30
Community items	3	20	1	5		1	30
Awareness items		1	25			4	30
Propriety items	2	1	3	18		6	30
Scholarship items		1	2		23	4	30

Scales	Number of Items with .40+ Loadings on the Largest Factor	Number of Items with .40+ Loadings on the Second Largest Factor
Practicality	12	8
Community	15	8
Awareness	14	11
Propriety	14	10
Scholarship	12	8
Average	45% of the items	

There were three describable subfactors in each of the scales. Beyond the three, no other subfactor in any scale consisted of more than two items which had not previously been accounted for by virtue of its having had a loading of .40 or more in one of the three major subfactors. The main subfactors composition of the scales is described as follows:

Practicality Scale
- A. Personal and social benefits, privilege, respect--12 items
- B. Parties, fun--6 additional items
- C. Close supervision, practical--4 additional items

Community Scale
- A. Faculty and school friendliness--13 items
- B. Student togetherness--5 additional items
- C. Group manners and consideration--6 additional items

Awareness Scale
- A. Contemporary society: reform, controversy, interest--11 items
- B. Social science emphasis and facilities--6 additional items
- C. Arts--7 additional items

Propriety Scale
- A. Consideration, caution, conscientious, ideals--14 items
- B. Personal behavior, self-control--4 additional items
- C. Absence of pranks, escapades--5 additional items

Scholarship Scale
- A. Standards, study, challenge--12 items
- B. Science emphasis--4 additional items
- C. Class atmosphere and energy--6 additional items

Since the factor analyses of each of the five scales also produce a complete set of item intercorrelations, we can get a further indication of the homogeneity of items within a scale by examining these intercorrelations. In a 30 x 30 correlation table, there are 435 correlations between pairs of items (29 + 28 + 27, etc. = 435). A set of items which is added together to produce a score should not have a negative correlation between any pair of items. Also, if item intercorrelations are very low the implication is that the items may not be adequately homogeneous. And, if the intercorrelations are very high, the items may be too homogeneous in the sense that many items are redundant. Table 10 summarizes the item intercorrelations within each of the five scales. Only two per cent of all the item intercorrelations were negative. If one sets as a standard of psychometric desirability the criterion that item intercorrelations within a scale should fall in the general range between .20 and .80, then 85 per cent of the correlations can be described as desirable.

All of the psychometric data presented thus far was used in selecting the best items for retention in a revised edition of CUES. In chosing these items, the following criteria were used:

1. The retained items should have good positive correlations with the score on the scale in which they are located--if possible, an item-scale score correlation of .40 or higher.

2. The retained items should have a higher correlation with the score on the scale in which they are located than with any other scale score.

3. The retained items should have a loading of .40 or higher on the factor in which they are classified.

4. The retained items should have a higher loading on the factor in which they presumably belong than on any other factor.

5. There should be no negative correlations between any pair of items in a scale.

6. The average per cent agreeing with the keyed response across the sample of 100 colleges should be at least 10 per cent and not higher than 90 per cent--that is, neither too rare nor too common a characteristic of college environments.

7. There should be a reasonable spread in the item marginals across the population of 100 colleges--specifically, a standard deviation for the distribution of percentages of at least 10 points, and preferably 15 points or more.

Table 10

Distribution of Intercorrelations of All Items within a Scale

	Negative	Between .0 and .19	Between .20 and .79	More than .80	Total Number of Correlations
Practicality	11	85	338 (77%)	1	435
Community	12	65	355 (82%)	3	435
Awareness	2	25	400 (92%)	8	435
Propriety	17	79	338 (77%)	1	435
Scholarship	0	24	396 (91%)	15	435
Average	2%	13%	85%	1%	

Not all of these criteria could be met. Moreover, we also imposed non-statistical criteria in making the selections. A few items, although psychometrically adequate, were out of date in the sense that their meaning or their relevance had changed. Other items were rejected simply because we did not like their content, or because their interpretation was too ambiguous. Overall, however, the extent to which the test has been improved is clearly evident in the data to be reported next.

Table 11 shows the distribution of mean percentages in the sample of 100 colleges for the items retained in CUES. None of the percentages is higher than 90 nor lower than 10. Three items had average marginals lower than 20 and two had average marginals of 80 or higher. In short, all but five items, or 95 per cent of the total number of retained items, had average marginals somewhere between 20 per cent and 80 per cent. This result satisfies quite well one of the criteria for item retention noted above.

Table 12 shows the standard deviations of the distribution of item percentages in the 100 colleges. All but three of these sigmas meet the minimum criterion noted above. At the same time, there are a total of 25 items with sigmas less than 15. In general, the larger the sigma the better the item. Even with a sigma of ten, however, a third of the institutions would presumably differ from one another by more than 20 percentage points.

Table 13, showing the distribution of item-scale score correlations between the retained items and the revised 20-item scale scores, can be compared with Table 4 which presented similar information prior to selecting the best items. For the retained items no correlation between an item and its scale was less than .40

Table 14 also can be compared with its earlier counterpart, Table 5. Previously, about a third of the items had higher correlations with some scale other than the one in which they were located. In the new test, there are only two such items. On three scales, all items now have their highest correlation with the scale in which they belong. There was one Practicality item which had a larger negative correlation with the Scholarship scale than a positive correlation with the Practicality scale. The difference in the correlations was .03. The item was put in the Practicality scale because the wording was descriptive of Practicality; and we chose to score it positively under the heading of Practicality rather than to score it negatively under the heading of Scholarship. On the Propriety scale, one item had a higher correlation with the Community score; the difference in the correlations was .01. It was retained in the Propriety scale

Table 11

Distribution of Mean Percentages, for 100 Schools, for the Items Retained in the Revised Edition of CUES

Percentages	Practicality	Community	Awareness	Propriety	Scholarship
90-99					
80		1			1
70		3			3
60	4	4	6	4	4
50	3	6	4	1	6
40	9	4	5	8	3
30	2	2	4	3	2
20	1		1	2	1
10	1			2	
0-9					
N	20	20	20	20	20

Table 12

Standard Deviations of the Distribution of Item Percentages in 100 Schools, Revised CUES

			Scales		
Sigmas	**Practicality**	**Community**	**Awareness**	**Propriety**	**Scholarship**
30 to 34	2	1			
25	2	3	1	4	
20	6	5	8	4	3
15	6	3	9	7	11
10	4	7	2	3	6
5		1		2	
0-4					
N	20	20	20	20	20

Table 13

Distribution of Item-Scale Score Correlations, CUES Revised

	Scales				
Correlations	Practicality	Community	Awareness	Propriety	Scholarship
.90-.99		1			
.80		3	7	5	8
.70	6	7	6	3	6
.60	7	6	6	5	1
.50	7	2	1	4	2
.40-.49		1		3	1
N	20	20	20	20	20

Table 14

Location of Highest Item-Scale Score Correlations: Revised CUES

	Scales					
Items	Practicality	Community	Awareness	Propriety	Scholarship	N
Practicality	19				1	20
Community		20				20
Awareness			20			20
Propriety		1		19		20
Scholarship					20	20

because the wording seemed more appropriate to that context.

Table 15 can be compared with Table 6. The data for the retained set of items, in Table 15, shows that in all cases the median correlation of items with their own scale scores is higher--that is, the 20-item scales are more internally consistent than the 30-item scales were. The median correlations of items with other scales indicates that the pattern of interrelationship among the items and scales is about the same as it was previously. The average correlation of items with scales other than their own is .20, compared with .19 previously.

The relationships among the scales can also be shown by the intercorrelations of scale scores, as in Table 16. This is compared with the intercorrelation of scale scores reported in the CUES manual. Of the 10 correlations on each part of the table, those for the new revised 20-item scales are lower in eight instances and higher in two instances. Overall, the average scale intercorrelation in the original study was .30. In the new scales, this has been reduced to .25. In the previous studies, the Scholarship and Awareness scales correlated .63 with each other. The new scales correlate .56. In the old data, the Practicality scale had negative correlations of -.51 and -.58 with Awareness and Scholarship. With the new scales these correlations are reduced to -.34 and -.50. Thus, the interrelationships among the Practicality, Awareness, and Scholarship scales have all been substantially reduced, the average magnitude dropping from a value of .59 to a value of .47. In the new scales, the relationship between Community and Propriety is greater, now being .53 compared with .40 in the original study.

The final step in studying the psychometric properties of the revised 20-item scales was to divide the scales into equivalent halves; then, to factor analyze each half, in order to see whether the five scales emerged successfully as factors which corresponded to the items in the respective scales.

The location of all factor loadings of .40 or higher is shown in Table 17. For the first equivalent half of the test, Factor 1 consists of all ten of the Awareness items, plus one other. Factor 2 consists of all ten of the Community items, plus four others. Factor 3 consists of seven Propriety items. Factor 5 consists of all ten of the Scholarship items, plus one other. Factors 4 and 7 seem to include mostly Practicality items but no really clear Practicality factor is evident. Reading across the rows of the table, one finds 12 entries for the Practicality items. Since there are only 10 Practicality items, this means that two of the items had a loading of .40 or higher on more than one factor.

Table 15

Median Correlations of Items with Their Own Scale Score and with Each of the Other Scale Scores, Revised CUES

Items	Practicality	Community	Awareness	Propriety	Scholarship
Practicality	.62	.10	-.20	.09	-.35
Community	.11	.72	.08	.40	.09
Awareness	-.24	.10	.76	.08	.43
Propriety	.04	.43	.01	.65	.09
Scholarship	-.43	.14	.49	.13	.80

Table 16

Intercorrelations of Scale Scores

From CUES Manual, 1963

	Prac	Comm	Awar	Prop	Schol
Practicality					
Community	.28				
Awareness	-.51	.10			
Propriety	-.18	.40	.08		
Scholarship	-.58	.00	.63	.28	

From Revised 20-Item Scores, 1967

	Prac	Comm	Awar	Prop	Schol
Practicality					
Community	.17				
Awareness	-.34	.09			
Propriety	.10	.53	.01		
Scholarship	-.50	.12	.56	.12	

Table 17

Location of All Factor Loadings of .40 or Higher:
Revised CUES, Equivalent Halves

	Factor							
	1	2	3	4	5	6	7	8
First Equivalent Half								
Practicality items	1			③	1	2	⑤	
Community items		⑩				1	1	
Awareness items	⑩	1						1
Propriety items		3	⑦	1		2	2	1
Scholarship items				1	⑩			
Second Equivalent Half	1	2	3	4	5	6	7	8
Practicality items	1		2	2	1	③	③	1
Community items	1	2	⑤	⑦				
Awareness items	⑩	1					1	
Propriety items		⑩	1		1			
Scholarship items	3		1		⑩			1

For the second equivalent half of the test, Factor 1 consists of all ten of the Awareness items plus five other items. Factor 2 consists of all ten of the Propriety items, plus three others. Factors 3 and 4 locate all ten of the Community items (two of the encircled are duplicates), plus six other items in either Factor 3 or Factor 4. Factor 5 consists of all ten of the Scholarship items, plus two others. Factors 6 and 7 account for six of the Practicality items, plus one other item. Again, no clear Practicality factor is produced. The Community items, all of which have loadings of .40 or higher in either Factor 3 or Factor 4, split in a way which put those items referring to faculty friendliness and helpfulness in Factor 3, and items referring to students in Factor 4.

Table 18 summarizes the above data and may be compared with the earlier results shown in Table 8. In every case, the factors produced by the revised test are more fully and clearly defined by the items which presumably should define them. For example, on what is obviously the Scholarship factor, all 20 of the items classified as belonging to the Scholarship scale had loadings of .40 or higher on this factor, and there were only three additional items which loaded .40 or more on that factor. Overall, the five factors are defined with what might be regarded as 76 per cent completness by the items which presumably should define them. This is a substantial improvement over the previous figure of 60 per cent.

Table 19 shows the location of the highest factor loadings for the revised set of items, and can be compared with Table 9. In every instance the composition of the factors is now more completely defined by the items which presumably should define them. The Practicality factor is defined, in terms of items having the highest loading on it, by 13 of the 20 items from the Practicality scale, or 65 per cent, compared with the previous definition by 16 of the 30 items from the Practicality scale, or 53 per cent. Community is now similarly defined by 18 of the 20 items from the Community scale, compared with the previous definition by 20 of the 30 items--now 90 per cent instead of 67 per cent. The Awareness factor is now totally defined by items from the Awareness scale. Scholarship is defined by 19 of the 20 Scholarship items, compared with 23 of the 30 items previously. And the improvement in the Propriety factor is from 60 per cent to 80 per cent. For the revised test, 86 per cent of the items have their highest factor loadings exactly where they should have them, compared with 68 per cent previously.

The exact factor loadings of the 20 items retained in each of the five revised scales are listed in Table 20. Practicality is the least satisfactory scale. It has six items with loadings of

Table 18

Summary of Items with .40 Loadings or Higher: Revised CUES

	First half		Second half			
Factor	4 and 7	+	6 and 7	=	14 Practicality items, out of 20 items	70%
Factor	2	+	3 or 4	=	20 Community items, out of 30 items*	67%
Factor	1	+	1	=	20 Awareness items, out of 26 items	77%
Factor	3	+	2	=	17 Propriety items, out of 20 items	85%
Factor	5	+	5	=	20 Scholarship items, out of 23 items	87%
			Total		92 out of 119 items	76%

* Two Community items had loadings of .40 or higher on both Factor 3 and Factor 4 in the second equivalent half, hence these items were counted only once.

Table 19

Location of Highest Factor Loadings: Revised CUES

	Practicality Factor	Community Factor	Awareness Factor	Propriety Factor	Scholarship Factor	Other	Total
First Equivalent Half							
Practicality items	8					2	10
Community items		10					10
Awareness items			10				10
Propriety items	1	1		6		2	10
Scholarship items	1				9		10
Second Equivalent Half							
Practicality items	5	3			1	1	10
Community items		8	1	1			10
Awareness items			10				10
Propriety items				10			10
Scholarship items					10		10
Sum of Halves							
Practicality items	13	3			1	3	20
Community items		18	1	1			20
Awareness items			20				20
Propriety items	1	1		16		2	20
Scholarship items	1				19		20

Table 20

Factor Loadings of Items Retained in Each Scale

Practicality	Community	Awareness	Propriety	Scholarship
81	87	87	89	92
78	85	86	86	88
72	84	85	85	86
70	83	83	84	85
68	80	82	82	85
61	79	80	81	83
56	78	80	78	82
56	76	77	73	81
55	75	75	72	78
54	75	74	68	74
50	70	71	67	71
48	70	68	63	66
46	64	66	63	66
44	61	66	61	65
36	61	64	48	64
32	58	62	45	62
28	58	61	45	61
24	49	53	36	56
23	49	53	35	54
21	41	47	19	51

lower than .40 with the presumed factor. The Propriety scale has three items with loadings of less than .40 with the presumed Propriety factor. In the other three scales all items have loadings of .40 or higher with the factor. It seems reasonable to say that all of the original scales, except Practicality, have been verified with considerable clarity. And certainly no evidence of any new or different major dimensions has emerged from these analyses. Practicality, although not factorially clear, nevertheless consists of items all of which correlated .50 or more with the Practicality score, so that by item analysis criteria, the scale remains quite defensible.

Normative Data

Evidence from the psychometric data has clearly supported the original structure of CUES into five scales. No new dimensions were produced by the new analyses. Moreover, as the scales were refined from 30 to 20 items, retaining the best items, it has been amply demonstrated that shorter scales are, psychometrically, far better than the original scales.

Despite the fact that the new scales are shorter, they are also more reliable than the original scales. This is due, in part, to the revised scoring system which takes into account all items answered by a consensus of two to one or better, and in part to the better item-scale score correlations and the clearer factor structure of the scales. In the initial CUES manual we reported K-R 21 reliabilities, for the sample of 48 institutions, to be .83, .85, .87, .81, and .92. The corresponding K-R 21 reliabilities for the new 20-item scales, for the reference group of 100 institutions, are .84, .86, .89, .82, and .88. There is no real difference between these two sets of reliability estimates. However, when we compute K-R 20 reliability estimates, instead of K-R 21, and thus use a calculation which conforms more adequately to the test conditions, the results for the group of 100 institutions are as follows: Practicality .94, Community .95, Awareness .96, Propriety .93, and Scholarship .95.

The distribution of scores, for the 100 schools in the reference group, is shown in Table 21. The scores in the Awareness and Scholarship scales have the greatest spread. The Propriety scale extends over a range of 28 points; and the Practicality and Community scales extend over a range of 31 points. On a 40 point scale, the theoretically desirable mean score would be 20 points. The actual means for the five scales are within approximately four points of this ideal, being, in round numbers, 19, 25, 20, 17 and 24. The standard deviations of these scores, ranging in round numbers from seven to nine points, are such that all or nearly all scores fall within a

Table 21

Distribution of Scores of 100 Schools: Revised CUES Scales

Scores	Practicality	Community	Awareness	Propriety	Scholarship
40					1
39			1		1
38		2	1		
37		6	2		5
36		1	2		2
35		2			2
34		1	3		3
33	3	7	3		5
32	2	3		2	4
31	2		3	1	
30	2	4	4	3	4
29		6	1	1	4
28	5	4	4	2	3
27	2	7		1	7
26	3	2	3	3	7
25	3	5	3	2	2
24	4	5	5	1	4
23	5	7	1	5	3
22	7	7	2	4	2
21	5	5	7	2	8
20	8	3	5	4	2
19	5	3	3	4	4
18	3	1	2	8	2
17	5	2	6	3	7
16	8	2	8	5	3
15	2	4	5	3	1
14	5	3	6	9	4
13	1	1	2	7	
12	2			4	4
11	2	2	5	6	1
10	3	3	3	5	2
9	3	1	2	3	
8	2		1	4	
7	3	1	3	1	2
6			2	5	
5	1				1
4	2			2	
3	1		1		
2	1		1		
N	100	100	100	100	100
Mean	18.95	24.61	20.22	16.55	24.07
Sigma	7.41	7.59	8.70	6.92	8.15

range of two sigmas on either side of the mean.

The percentile equivalents for these raw scores are presented in Table 22. These are not normalized percentiles, they are raw score percentiles, or, since the number of cases is 100, cumulative frequencies. On the Practicality scale, the table indicates, for example, there there is one school (one per cent) with a score of two points or below, two schools (two per cent) with scores of three or below, four schools (four per cent) with scores of four or below, etc.

The distribution of raw scores for each of the eight types of institutions included in the norm group is shown in Figures 1 to 5. In drawing these graphs we have followed two policies: first, for each of the scales, the institutional types are presented in descending order from highest to lowest mean score; and second, we have left certain deviant cases outside the enclosed bars. It can be argued, we believe, that a truer picture of what the environments of a given type of college are like is gained by excluding an occasional deviant case. In Figure 1, showing scores on the Practicality scale, all the Teachers Colleges (TC) have scores which fall within a fairly narrow segment of the scale. The State Colleges (SC) however, have one score which is seven points lower than the next highest score, and this is counted as a deviant case. Although the total range of scores on the Practicality scale for the institutions we classified as State Colleges was 24 points, most of the colleges (nine out of ten) fell within a range of 17 points. In a sense, one can regard the so-called deviant case as an error in classification. The term "wild shot" is used by Tukey (29) in discussing such cases. In relation to the shape of the distribution they are "surprising tails" rather than "conforming tails." In our own data, a deviant case or "wild shot" always differs by at least four points from the next closest case, and in most instances the difference is five points or greater. Having omitted an occasional deviant case, or error, we then compute the mean of the remaining cases in the group, a procedure similar to what Tukey describes as "trimmed" mean.

In each of the five graphs, Figures 1 to 5, it is obvious that the various types of institutions differ considerably from one another. On the Practicality scale (Figure 1) there is very little overlap between Teachers Colleges, State Colleges, and General Universities, on the one hand, and Selective Liberal Arts Colleges, Selective Universities, and Colleges of Engineering and Science, on the other hand. On the Community scale (Figure 2) the Strongly Denominational Colleges have very high scores, all but one of which is higher than the highest score of any Teachers College, General University, State College, or Selective University. On the

Table 22

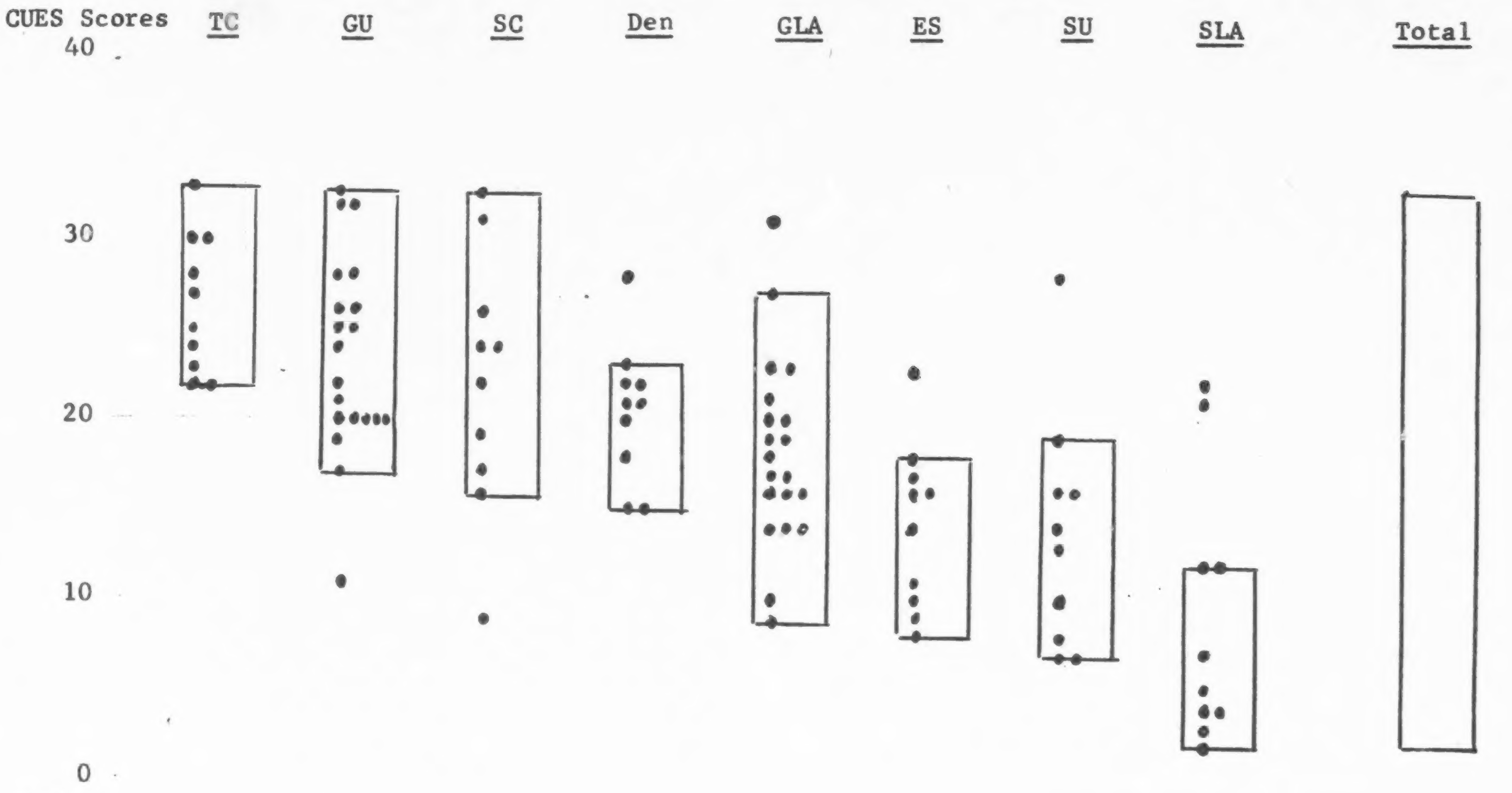
Percentile Equivalents for CUES Scale Scores

Based on Reference Group of 100 Colleges and Universities

	Percentiles				
Scores	Practicality	Community	Awareness	Propriety	Scholarship
40					100
39			100		99
38		100	99		98
37		98	98		98
36		92	96		93
35		91	94		91
34		89	94		89
33	100	88	91		86
32	97	81	88	100	81
31	95	78	88	98	77
30	93	78	85	97	77
29	91	74	81	94	73
28	91	68	80	93	69
27	86	64	76	91	66
26	84	57	76	90	59
25	81	55	73	87	52
24	78	50	70	85	50
23	74	45	65	84	46
22	69	38	64	79	43
21	62	31	62	75	41
20	57	26	55	73	33
19	49	23	50	69	31
18	44	20	47	65	27
17	41	19	45	57	25
16	36	17	39	54	18
15	28	15	31	49	15
14	26	11	26	46	14
13	21	8	20	37	10
12	20	7	18	30	10
11	18	7	18	26	6
10	16	5	13	20	5
9	13	2	10	15	3
8	10	1	8	12	3
7	8	1	7	8	3
6	5		4	7	1
5	5		2	2	1
4	4		2	2	
3	2		1		
2	1				
1					
0					

Figure 1

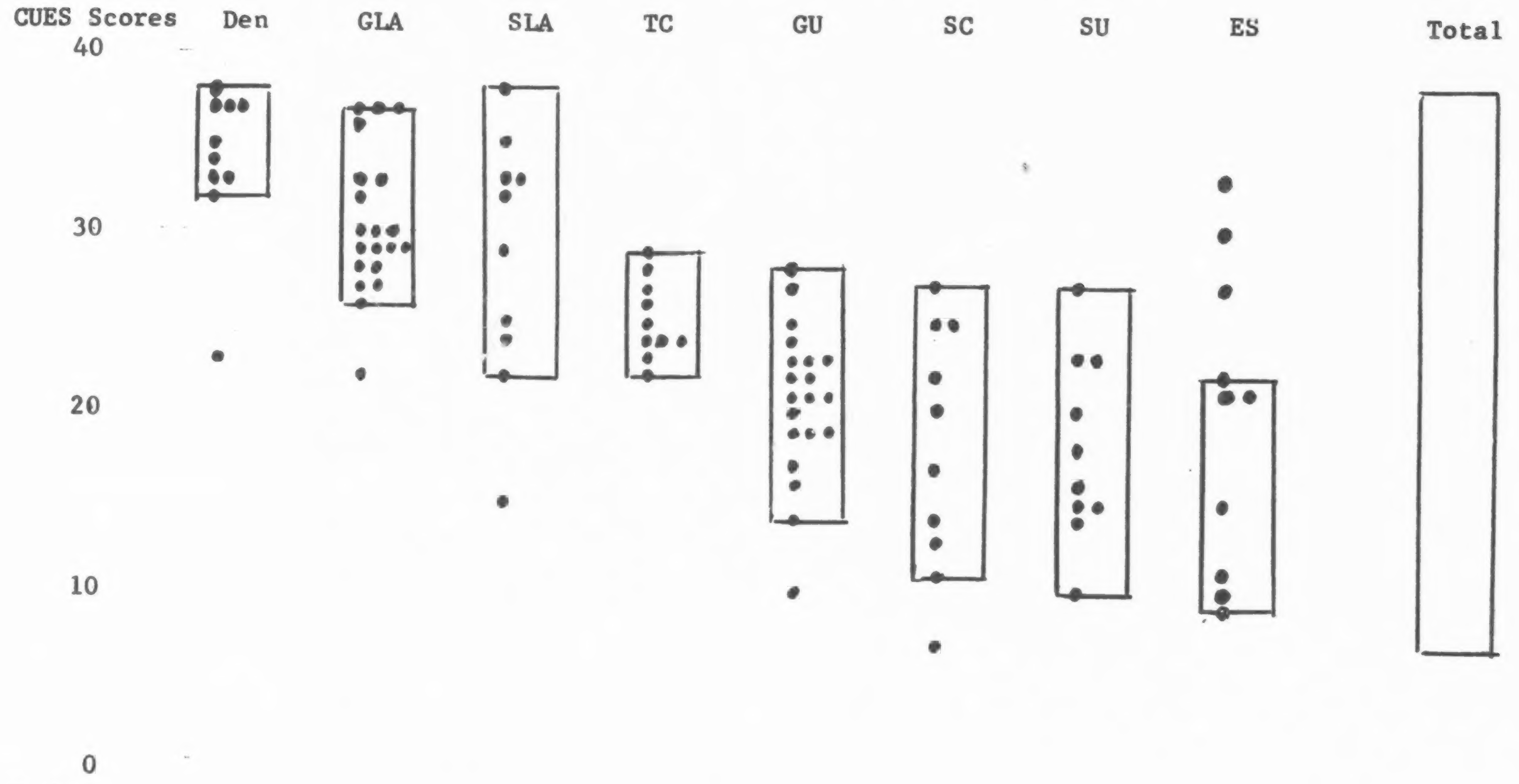
Range and Mean of CUES Scores for Different Types of Schools, with Most Deviant Cases Omitted: PRACTICALITY SCALE



	TC	GU	SC	Den	GLA	ES	SU	SLA	Total
Number Omitted	0	-1	-1	-1	-1	-1	-1	-2	0
Number Included	10	19	9	9	19	9	9	8	100
Mean	26.4	24.1	23.5	19.7	17.5	13.2	12.2	6.1	18.95

Figure 2

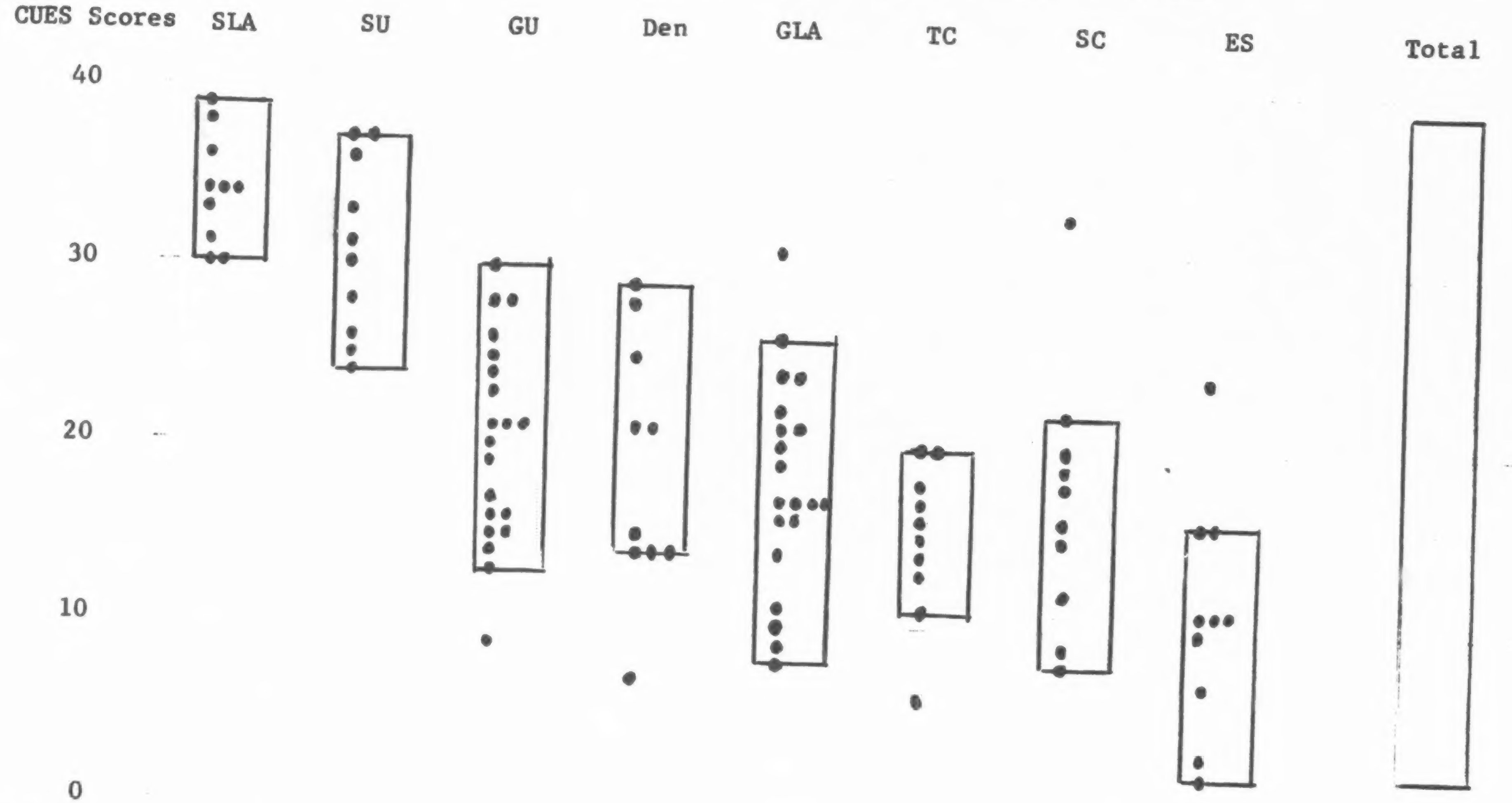
Range and Mean of CUES Scores for Different Types of Schools, with Most Deviant Cases Omitted: COMMUNITY SCALE



	Den	GLA	SLA	TC	GU	SC	SU	ES	Total
Number Omitted	-1	-1	-1	0	-1	-1	0	-3	0
Number Included	9	19	9	10	19	9	10	7	100
Mean	35.1	30.9	30.1	25.2	21.3	19.3	18.1	15.6	24.61

Figure 3

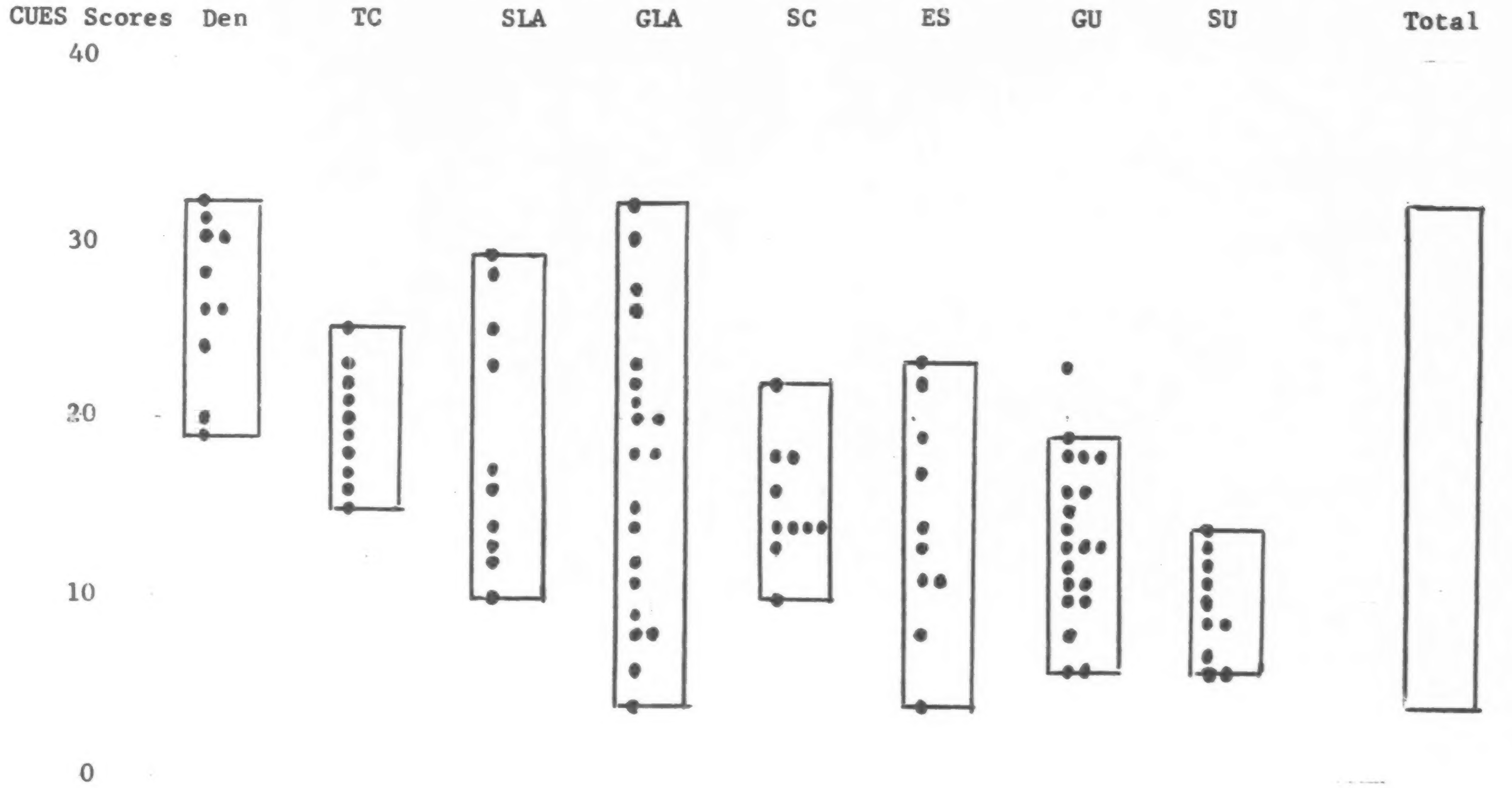
Range and Mean of CUES Scores for Different Types of Schools, with Most Deviant Cases Omitted: AWARENESS SCALE



	SLA	SU	GU	Den	GLA	TC	SC	ES	Total
Number Omitted	0	0	-1	-1	-1	-1	-1	-1	0
Number Included	10	10	19	9	19	9	9	9	100
Mean	33.9	30.7	20.6	20.1	17.3	16.0	14.8	9.7	20.22

Figure 4

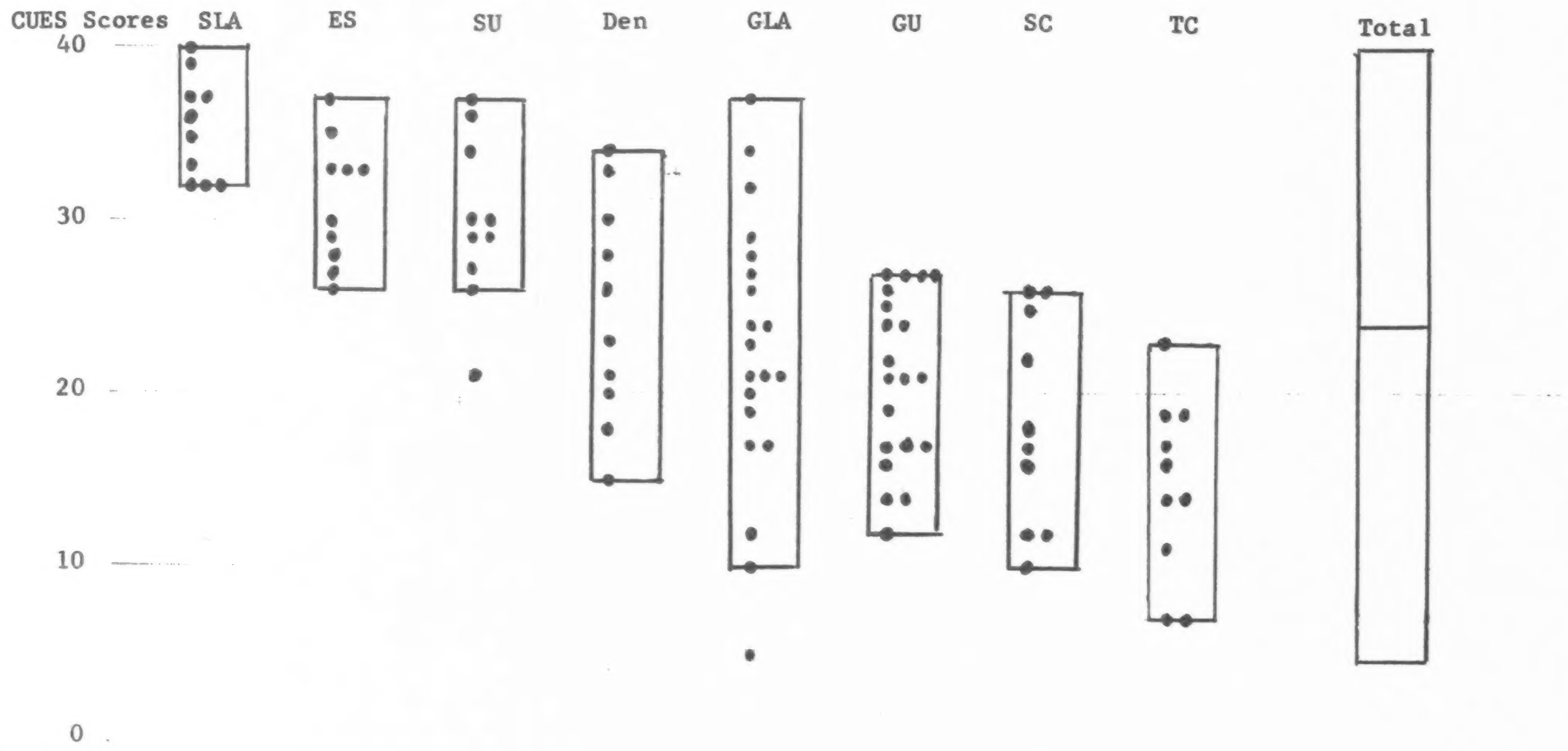
Range and Mean of CUES Scores for Different Types of Schools, with Most Deviant Cases Omitted: PROPRIETY SCALE



	Den	TC	SLA	GLA	SC	ES	GU	SU	Total
Number Omitted	0	0	0	0	0	0	-1	0	0
Number Included	10	10	10	20	10	10	19	10	100
Mean	26.6	19.6	18.7	17.2	15.3	14.2	13.0	9.7	16.55

Figure 5

Range and Mean of CUES Scores for Different Types of Schools, with Most Deviant Cases Omitted: SCHOLARSHIP Scale



	SLA	ES	SU	Den	GLA	GU	SC	TC	Total
Number Omitted	0	0	-1	0	-1	0	0	0	0
Number Included	10	10	9	10	19	20	10	10	100
Mean	35.3	31.1	30.9	24.8	23.3	20.9	18.4	14.7	24.07

Awareness scale (Figure 3) there is, except for a few deviant cases, no overlap in Selective Liberal Arts Colleges and Selective Universities compared with Teachers Colleges, State Colleges, and Engineering and Science Colleges. On the Propriety scale (Figure 4) the Selective Universities have no overlap with any of the Teachers Colleges or Strongly Denominational Colleges. And on the Scholarship scale (Figure 5) almost all of the Selective Liberal Arts Colleges, Selective Universities, and Colleges of Engineering and Science have higher scores than any of the General Universities, State Colleges, or Teachers Colleges.

The total number of deviant cases in our data is 25--eight on Practicality, eight on Community, six on Awareness, one on Propriety, and two on Scholarship--making five per cent overall. The fact that this number is so small is, at least partially, a validation of the institutional classification we have developed, a classification which has resulted in very few mistakes or deviant cases.

The total range of scores, and the adjusted range, in each of the eight types of institutions is shown in Table 23. In Table 24 the adjusted range is shown as a per cent of the total range. Twenty-nine of the 40 percentages shown in this table are 50 per cent or smaller, indicating that the range within a subgroup is at least 50 per cent smaller than the range of the total group. Thirty-six of the 40 percentages are 60 per cent or smaller, indicating that in 90 per cent of the instances, the subgroup range is at least 40 per cent smaller than the total range. Table 24 can also be read to reveal the ways in which colleges of a given type are most like one another. For example, Selective Liberal Arts Colleges are very similar with respect to Scholarship, Awareness, and Practicality, but they differ widely among themselves with respect to Propriety. Selective Universities are quite similar to one another on all scales except Propriety. Denominational Colleges are most similar to each other on the Community scale, and differ most on the Scholarship scale. General Liberal Arts Colleges run the gamut of scores on Propriety and nearly so on Scholarship; their similarity to one another is greatest on the Community scale. General Universities and State Colleges show a general reduction in range on all scales. Teachers Colleges differ most on the Scholarship scale; but are quite homogeneous on all other scales. From the average percentages in the right hand column, it is clear that General Liberal Arts Colleges are the most diverse set of institutions, and that Teachers Colleges are the most homogeneous.

The typical profile for each of the eight major categories of institutions is shown in Figure 6. Since the raw scores on one scale are not equivalent to the raw scores on other scales, the scores have been converted to percentiles. What is plotted on the graphs is the percentile equivalent of the "trimmed" mean for each group. The differences between the institutional groups are

Table 23

Total, and Adjusted Total, Ranges of CUES Scores in Major Types of Institutions

	Practicality		Community		Awareness		Propriety		Scholarship	
	Tot	Adj	Tot	Adj	Tot	Adj	Tot	Adj	Tot	Adj
Types										
SLA	20	10	23	16	9	9	19	19	8	8
SU	21	12	17	17	13	13	8	8	16	11
ES	15	10	24	13	22	14	19	19	11	11
Den	13	8	15	6	22	15	13	13	19	19
GLA	22	18	15	11	23	18	28	28	32	27
GU	22	16	18	14	21	17	17	13	15	15
SC	24	17	20	16	27	16	12	12	16	16
TC	11	11	7	7	14	9	10	10	16	16
Total, All Schools	31	31	31	29	37	37	28	28	35	33
N	100	92	100	92	100	94	100	99	100	98

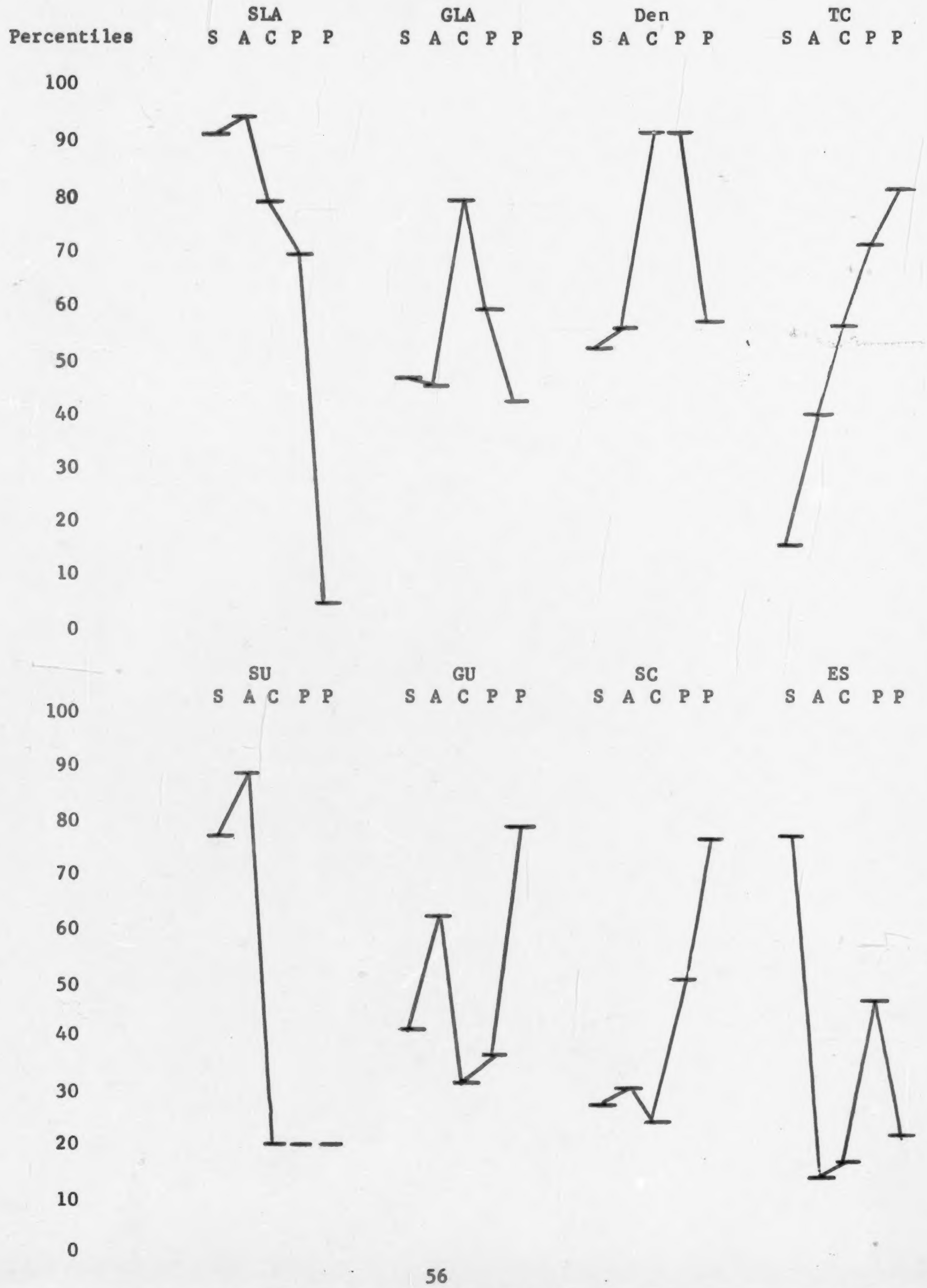
Table 24

Per Cent of Subgroup Range (Adjusted) to Total
Range of CUES Scores Across All Institutions

Subgroup	Practicality	Community	Awareness	Propriety	Scholarship	Average
SLA	32%	52%	24%	68%	23%	40%
SU	39	55	35	29	31	38
ES	32	42	38	68	31	44
Den	26	19	41	46	54	37
GLA	58	35	49	100	77	64
GU	52	45	46	46	43	46
SC	55	52	43	43	46	48
TC	35	23	24	36	46	33
Average	41%	40%	38%	54%	44%	43%

Figure 6

College Profiles



obvious in these typical profiles. Moreover, each group has a unique profile in at least one or more respects. Selective Liberal Arts Colleges are typically very high on the Scholarship and Awareness scales, considerably higher than average on the Community and Propriety scales, and very low on the Practicality scale. Selective Universities are similar to Selective Liberal Arts Colleges in having typically high scores on Scholarship and Awareness and low scores on Practicality. They differ sharply from Selective Liberal Arts Colleges with respect to Community and Propriety. General Universities and State Colleges differ from Selective Universities in having correspondingly lower scores on Scholarship and Awareness, and correspondingly higher scores on Propriety and Practicality. General Universities and State Colleges differ most from one another on the Awareness scale. General Liberal Arts Colleges and Strongly Denominational Colleges are generally similar in Scholarship, Awareness, and Practicality; they differ most in respect to the Propriety scale, and to a lesser extent on the Community scale. The profile for Teachers Colleges is almost a mirror image of the profile for Selective Liberal Arts Colleges. Colleges of Engineering and Science are like Selective Universities in having a high score on Scholarship, but totally unlike Selective Universities in their low Awareness score.

Validity Data

The validity data consist of correlations between CUES scores and various characteristics of students and institutions. When all possible correlations are not shown in a table, the ones that are shown are only those which are significantly greater than chance at or beyond the .01 level of confidence.

Table 25 relates CUES scores to various indicators of scholastic aptitude. For 49 of the 100 schools in the CUES norm group, data on the Scholastic Aptitude Test (SAT-Verbal) were obtainable from the College Board's Manual of Freshmen Test Profiles (6). For all 100 of the schools in the norm group, a freshman input factor labeled "intellectuality" by Astin (2) in his book Who Goes Where to College? was available for correlation. From the NORC survey of '61 graduates, the mean score on the National Merit Scholarship Qualifying Test (NMSQT) was available for 41 of the 100 schools in the CUES norm group, and for a total of 70 schools altogether. In the NORC survey of '64 graduates, students were asked to indicate whether they had been in the top 10 per cent of their high school class. This information was available for 63 schools in the CUES norm group, and for 105 schools altogether. On each of these indicators of college aptitude, and for each of the samples of schools, there is a significant positive correlation

Table 25

Correlations between College Press and College Aptitude

Aptitude Variables	Practicality	Community	Awareness	Propriety	Scholarship
Mean SAT Scores of Entering Freshmen (N = 49)	-.74		.53		.60
Intellectuality (Astin) (N = 100)	-.59			-.33	.60
Mean NMSQT Score					
'61 NORC Study N = 41	-.59		.40		.58
N = 70	-.58	-.44		-.47	.38
Being in Top 10 Per Cent of High School Class					
'64 NORC Study N = 63	-.38		.30		.50
N = 105			.32		.43

between students' academic ability and the college press scale for Scholarship. A similar positive relationship is true in most cases with the Awareness press; as are negative relationships with the Practicality press.

In Astin's study (2), noted above, there were six variables which he described as freshmen input factors. The correlations between those factors and CUES are shown in Table 26. Intellectuality is defined mainly by SAT-Math scores and interests in science. This input factor correlates positively with Scholarship press, and negatively with Practicality and Propriety. Estheticism is defined mainly by having won awards in high school for art, music, and writing. It correlates positively with Awareness and Scholarship, and negatively with Practicality. Status is mainly a reflection of the occupational and economic level of the student's family. The per cent of entering students from high status backgrounds is positively related to the college environment scales for Awareness and Scholarship, and negatively to Practicality and Propriety. Pragmatism refers mainly to the number of entering students who have Realistic vocational choices (such as Engineering) and to the proportion of men in the entering class. It is negatively related to Community, Propriety, and Awareness. Masculinity is defined mainly by the proportion of men in the student body and the proportion of students interested in Enterprising and Scientific occupations. Masculinity is negatively related to Community and Propriety.

Table 27 shows data for career plans, college major, and plans to attend graduate school. In general, the Practicality press is negatively related to career plans and college majors in science, social sciences, and humanities; but shows some positive relation to the fields of education and business. The Community press is negatively related to engineering, but occasionally has a positive relation to education and biological sciences. The Awareness press has positive relation to the fields of social science and humanities; and it has negative relationship with engineering and business. Propriety has clear positive correlation with the field of education; but negative relationship with engineering and business. Scholarship is positively related to physical sciences and humanities, and to a lesser extent with biological sciences and social sciences; while its relation to education and business is negative.

Between college press and students' recollection of their expectations as freshmen about going to graduate school there are relatively few significant correlations--two negative correlations each with Practicality and Propriety, and two positive correlations with Awareness. By the time of their senior year, however

Table 26

Correlations between College Press and
Freshman Input Factors Developed by Astin

	Practicality	Community	Awareness	Propriety	Scholarship
Intellectuality	-.62	-.18	.28	-.33	.60
Estheticism	-.45	.07	.36	.18	.27
Status	-.38	.16	.53	-.28	.25
Pragmatism	.14	-.52	-.29	-.45	.07
Masculinity	-.02	-.28	-.12	-.57	.12

N = 100

(Note: Underlined coefficiants are significant at p. 01)

Table 27

Correlations between College Press, and Educational and Career Plans

	Practicality				Community				Awareness				Propriety				Scholarship			
	'61		'64		'61		'64		'61		'64		'61		'64		'61		'64	
	41	70	63	105	41	70	63	105	41	70	63	105	41	70	63	105	41	70	63	105
Career Plans as Freshmen																				
Physical Science	-51	-38	-42	-30															33	33
Engineering					-56	-59	-38	-32	-41		-30	-25		-34	-31	-27				
Biological Science			-36								40	27								
Social Science			-34	-35							35	34								
Humanities			-34	-36							41	47								28
Education		32	31			47		25					46	55	44	48			-49	-28
Business			30									-32				-25		-31		-39
Career Plans as Seniors																				
Physical Science																				
Engineering					-55	-56	-33	-30	-42		-30				-30	-30				
Biological Science					43															
Social Scinece			-49	-41							47	34							30	
Humanities		-31	-38	-36							38	39							42	32
Education		36				46							44	54	45	45	-41		-48	-27
Business												-35	-54	-45	-48	-45				-34

Table 27 (Continued)

	Practicality				Community				Awareness				Propriety				Scholarship			
	'61		'64		'61		'64		'61		'64		'61		'64		'61		'64	
	41	70	63	105	41	70	63	105	41	70	63	105	41	70	63	105	41	70	63	105
Major Field of Studies in College																				
Physical Science																				30
Engineering					-55	-55	-38	-34	-41							-31				
Biological Science			-31			38													31	30
Social Science		-40	-39	-40					51	38	30	26			-39					
Humanities		-31	-50	-52	41				48	35	39	43							37	34
Education	46	47	35	35		37								42	39	38	-42		-52	-33
Business	40		49									-31						-35		-39
Plans to Attend Graduate School																				
Planned, as Freshmen			-32	-26					52	32					-30	-29				
Planned, as Seniors	-54	-53	-59	-52			-41	-36						-42	-46	-37	51	40	31	

there are many more significant correlations--four negative correlations with the Practicality press, three negative correlations with the Propriety press, two negative correlations with the Community press, and three positive correlations with the Scholarship press.

A variety of student attitudes and activities are associated with college press, as shown in Table 28. The proportion of students regarding themselves as unconventional is positively related to Scholarship press, and negatively related to Practicality, Community and Propriety. The proportion of students who regard themselves as religious is positively related to Practicality, Community and Propriety. Attending church regularly is also positively related to the Community and Propriety press scales. Students reporting that they have no religious preference are found, in greater proportions, in environments characterized by high press for Awareness and Scholarship.

The proportion of students reporting that they have had some experience in carrying out a research project is positively related to Scholarship press and negatively related to Practicality press. Participation in no extra-curricular activities is a rare phenomenon in environments having a high Community press. Active participation in civil right is positively correlated with Scholarship and Awareness, and also in one instance with Community, but negatively correlated with the Practicality press.

The per cent of students who regard the understanding and appreciation of ideas as the most important objective of college education--either for themselves or for the typical student at their college--is positively related to the Scholarship, Awareness, and Community scales, and negatively related to the Practicality scale.

The proportion of students who say that they feel a strong emotional attachment to their college is positively related to the Awareness and Community aspects of the environment, and to a lesser degree to the Propriety aspect. It is unrelated to either Practicality or Scholarship.

In the 1961 NORC survey, students were asked to rate their college with respect to the excellence of classroom teaching, the excellence of facilities for research, the excellence of the student body, and the excellence and distinction of the faculty. The correlations between these qualities and college press are shown in Table 29. The proportion of students rating all of these qualities as excellent at their school is positively related to the Awareness and Scholarship press scores of their school, and negatively with the Practicality press scores. The research

Table 28

Correlations between College Press and Student Attitudes and Activities

	Practicality		Community		Awareness		Propriety		Scholarship	
Data for '61 NORC Survey --N's 41, 70										
Self-ratings										
Liberal political orientation	-.41	-.32								
Fairly or very religious	.60	.54	.44	.41			.48	.31		-.37
Religious preference--none	-.62	-.63		-.46	.44	.42		-.48	.46	.43
Unconventional	-.61	-.63	-.42	-.48			-.37	-.36	.46	.41
Reported Activities										
Had experience in research		-.40								.31
Attended church regularly				.52			.47	.55		
No extra-curricular activites			-.69	-.62						
College Values										
College objective of understanding and appreciation of ideas most important										
-to self		-.37	.43	.32	.45	.33				
-to typical students	-.42	-.36	.50	.50	.59	.48			.43	.44

Table 28 (Continued)

	Practicality		Community		Awareness		Propriety		Scholarship	
Feel strong emotional attachment to college			.54	.62	.55	.40		.32		
Data from '64 NORC Survey--N's 63, 105										
Religious preference--none	-.65	-.47			.45	.36	-.45	-.39	.37	.27
No extra-curricular activities			-.57	-.50	.32					
Active in fraternity or sorority					-.35		-.38	-.51		
Active in civil rights	-.54	-.44		.30	.43	.42			.42	.36

Table 29

Correlations between College Press and College Qualities

	Practicality		Community		Awareness		Propriety		Scholarship	
Data from '61 NORC Survey--N's 41, 70										
Excellent classroom teaching	-.41	-.42			.50	.47			.61	.59
Excellent facilities for research		-.37		-.39	.61	.58	-.46	-.51	.43	.42
Excellent calibre of students	-.56	-.54			.46	.48			.71	.68
Excellent faculty	-.56	-.62			.53	.55			.67	.67

quality of the school is also negatively related to the Community and Propriety press scores.

The Environmental Assessment Technique, or EAT, developed by Astin and Holland (4), was subsequently, with some modification, applied to all accredited colleges by Astin (2) in his book Who Goes Where to College? with standard scores assigned to each of the EAT variables. Correlations between these and the variables measured by CUES are shown in Table 30. Practicality press is negatively related to Selectivity and to Scientific orientation, and positively related to Conventional orientation. Community press is negatively related to size and Realistic orientation, and positively related to Social orientation. The Awareness press is positively related to selectivity, Enterprising orientation, and Artistic orientation. Propriety relates negatively to selectivity, size, and Realistic orientation, and positively to Conventional and Artistic orientations. Scholarship is positively related to selectivity, and Scientific orientation, and negatively related to Social orientation. These EAT variables are defined as follows: (1) Selectivity is the number of able students who apply for admission divided by the number of freshmen admitted; (2) Size is total full time enrollment; (3) Realistic orientation is the per cent of degrees given in such fields as engineering, agriculture, physical education (4) Scientific orientation is the per cent of degrees given in various natural science fields; (5)Social orientation is the per cent of degrees in education, nursing, social work, etc.; (6) Conventional orientation is the per cent of degrees in accounting, business, economics, library science, etc.; (7) Enterprising orientation is the per cent of degrees in advertising, business administration, history, political science, journalism, etc;and(8)Artistic orientation is the per cent of degrees in fine arts, writing, languages, music, speech.

Most of the institutional statistics whose correlations with college press scores are shown in Table 31 are in one way or another reflections of institutional size: size of student body, size of staff in various categories, size of financial resources, size of library, and complexity of the institution. All of these institutional factors have negative correlations with the Community, and Propriety press scores. Most of them also have positive correlation with Awareness, and, to a lesser extent, with Scholarship. Two items in the table are not functions of size. One is the per cent of faculty members with PhDs; but this also has negative correlations with Community and Propriety, although not positive correlations with either Scholarship or Awareness. The other item is tuition; and here the correlations are negative with Practicality, and in some cases positive with Scholarship.

Table 32 shows all the correlations between the college press

Table 30

Correlations between College Press and EAT Variables

	Practicality	Community	Awareness	Propriety	Scholarship
Selectivity	-.67	-.14	.36	-.26	.57
Size	.24	-.69	.15	-.41	-.14
Realistic orientation	.12	-.50	-.23	-.30	.12
Scientific orientation	-.29	.08	-.08	-.17	.41
Social orientation	.24	.25	.09	.43	-.35
Conventional orientation	.32	-.19	.03	.29	-.20
Enterprising orientation	-.11	.13	.37	-.24	.08
Artistic orientation	-.17	.24	.41	.27	-.06

N = 100

(Note: Underlined coefficients are significant at p. .01)

Table 31

Correlations between College Press and Institutional Statistics

	Practicality				Community				Awareness				Propriety				Scholarship			
	'61		'64		'61		'64		'61		'64		'61		'64		'61		'64	
Personnel Statistics																				
No. of undergraduates enrolled					-59	-66	-63	-61			31	31	-46	-48	-38	-38				
No. of full time resident faculty with rank of instructor or above					-44	-51	-56	-54		36	42	41	-43	-44	-45	-40				25
No. of junior faculty--lab assistants, etc.					-43	-47	-48	-46		38	40	41	-43	-42	-36	-34			35	33
No. of staff for personnel services					-42	-47	-43	-45						-34		-27				
No. of staff library services						-40	-53	-50		32	44	43		-33	-36	-35				25
No. of staff for organized research						-44	-30	-36			27								31	
Percentage of faculty with PhD		-33				-39	-33	-28					-39	-42	-45	-42				

Table 31 (Continued)

	Practicality				Community				Awareness				Propriety				Scholarship			
	'61		'64		'61		'64		'61		'64		'61		'64		'61		'64	
Financial Statistics																				
Tuition	-51	-61	-57	-52												-27		34	37	
Money spent on library acquisition						-35	-46	-44	43	47	42	42	-46	-46	-35	-35				
Money spent on undergraduate scholarships		-35				-36	-32	-36		38	36	33	-46	-43	-41	-40		36	37	27
Money for endowment		-42												-35				34		
Money--Current income							-52	-30			45				-39				33	
Other Statistics																				
No. of volumes in library							-48	-45	54	39	54	51	-54		-41	-39			37	34
No. of periodicals in library						-36	-49	-45	44	49	45	46	-47	-43	-32	-33		38	38	35
Complexity of institution--comprehensive					-72	-61	-46	-51					-56	-48	-40	-46				

Table 32

Correlations between College Press and the Institutional "Factors" Developed by Astin

	Practicality	Community	Awareness	Propriety	Scholarship
Affluence	-.65	-.03	.46	-.38	.65
Size	.22	-.65	-.01	-.27	-.08
Masculinity	.15	-.26	-.24	-.30	-.02
Homogeneity	-.32	.16	-.25	.28	.14
Technical Emphasis	.23	-.40	-.38	-.16	-.13

N = 61

(Note: Underlined coefficients are significant at p. .01) scales and the factors developed by Astin from analyzing an assortment of institutional characteristics. Astin's data are reported as rankings of some 300 or so institutions on each of the factor scores. For the 61 schools in Astin's sample for which we had CUES scores, we ranked their factor scores from 1 to 61, then reversed the signs of the resulting correlations so that, for example, a positive correlation between Affluence and Scholarship means that high affluence and high scholarship go together. In the table, the significant correlations are identified. Practicality is negatively related to Affluence and Homogeneity. Community is negatively related to Size and Technical Emphasis. Awareness is positively related to Affluence and negatively to Technical Emphasis. Propriety is negatively related to Affluence and Masculinity. And Scholarship is positively related to Affluence. Astin's institutional factors are derived from many pieces of information, but the essence of each factor may be described as follows: (1) Affluence is a combination of intellectual and financial resources--bright students plus money produce a high score on this factor; (2) Size is simply the total student enrollment; (3) Masculinity is the per cent of men in the student body; (4) Homogeneity refers to the curriculum, that is, to the number of different fields in which degrees are offered and the extent to which students are concentrated in a few programs or spread over many different programs; and (5) Technical Emphasis refers to Engineering and similar technical specialities and reflects the degree to which this emphasis constitutes a large or small part of the total institution.

By-Products and Other Data

One of the side-projects of the present study involved trying out a new set of items for possible inclusion in a revised edition of CUES. The project was one of several supported primarily by a grant from the College Entrance Examination Board. Its main purpose was to develop items which might contribute eventually to the publication of a special diagnostic edition of CUES for measuring the environmental press of different subcultures in complex universities. At the same time, the try-out of these new items would provide a resource to draw upon for modification of the regular edition of CUES if such modification seemed warranted. Since the results of this project have been fully reported elsewhere (21), they are not included in the present report. Briefly, however, a 300 item test (150 from CUES plus 150 new items) was administered to students in various academic fields at four universities. From the data received (710 responses from 15 academic groups in four institutions) the difficulty and discriminating power of the new items was estimated. When the revised edition of CUES is published by Educational Testing Service, the test will consist of the five 20-item scales we have described in the present report, together with the normative data on these scales, plus an additional ten items tentatively assigned to each of the scales. The ten new items for each scale have been selected from the 300 item test described above. The inclusion of these items, and similar ones in future editions, will provide the basis for continued renewal and revision of CUES. The items retained from the current edition of CUES, plus the new items, are shown in the Appendix.

Three other side-projects, also supported primarily by a grant from the College Entrance Examination Board, were in part facilitated by data from the present national study of college environments. The 300-item test noted above was used by Dr. Vernon Hendrix to collect national normative data on junior college environments. A preliminary report of this and related junior college studies has been made (20). Another study has analyzed the extent to which different groups of reporters describe the campus in similar ways (18). It was found, for example, that CUES scores are highly stable when based on comparable samples of students over a one or two year period; that women tend to perceive the environment as slightly higher in Community and Propriety than men do; that faculty and student perceptions are very similar except on the Scholarship scale, where faculty responses result in a higher score; that sophomores, juniors, and seniors produce very similar scores, but that the perceptions of freshmen are quite different; that there are no major differences in the scores related to whether the students are academically successful or unsuccessful, or are residents or commuters; that there are no differences, except in the Scholarship scale, related to the student's major academic field; and that perception of the environment is unrelated to any personality characteristics of the students. Overall, the report concluded that CUES scores obtained from different groups on the same campus were highly consistent and reliable. Differences in scores rarely exceeded three points on the 30-item CUES scales. Finally, a special report was written for the College Board on the possible uses of CUES in the admissions process (19). Expectations of high school seniors and entering freshmen at various colleges as to what they thought would be true about the college environment were compared with campus profiles obtained from upperclassmen. Large discrepancies were apparent. By using information obtained in the national study of college environments, guidelines can be presented to prospective students indicating how likely certain features or conditions will be found at different types of institutions.

DISCUSSION

The kind of research involved in the present study may appear to be quite simple and uncomplicated--common item discrimination indexes, routine factor analyses, percentiles, correlations, and a few graphs. But underlying the straightforward application of familiar techniques are problems, issues, and judgments which call for broad perspectives about higher education and about the nature of measurement. A discussion of these problems follows.

National Baseline or National Sample?

The goodness of psychometric data about any test, and the fairness of interpretations that can be made of the test results, depend upon the adequacy of sources used in making the analyses and the interpretation. It is for this reason that a good deal of thought was given to the problem of what constitutes an adequate data base for the analysis and interpretation of a test whose purpose is to measure, reliably and meaningfully, major ways in which the perceived characteristics of college environments differ from one another.

The common and respectable approach of drawing a random sample from some defined universe is deceptively simple. One could take every *n*th insitution listed in the American Council on Education's directory of American colleges and universities, but what would he get? The resulting sample would consist primarily of a lot of small colleges, since there are many more small colleges than large ones; but these small colleges are not the environments where most college students live. Most college students are in large complex universities. It does not help matters merely to obtain a larger number of student reporters from the large campuses than from the small campuses. The unit of study is the number of institutions, not the number of students. Beyond whatever number of subjects are needed to give stability to the results, adding more subjects is simply redundant. The problem, really, is to define appropriately the universe from which a sample is to be drawn. In the initial development of CUES, the universe was a national distribution of college enrollments. Thus, if half of all the college students in the country are in large complex universities, then half of the institutions for a national sample of environments should be environments of this kind. While this approach provides a more equitable sample of environments than the other approach, it is still not very satisfactory for a variety of reasons. Both approaches result in having a lot of institutions which are more or less alike--either big universities or small colleges as the case may be--and thus reduce and obscure differences between institutions on a national scale. Various categories of institutions may be properly represented according to their numbers or their enrollments, but not necessarily according to their significance or importance in American higher education. This is an educational and social judgment, not a statistical judgment. For example, neither the number of institutions, nor the enrollments in them, of colleges of Engineering and Science is very large, but the importance, leadership, and status in society and education of such places as MIT, Cal Tech, Carnegie Tech, etc., is far greater than mere numbers. Predominantly denominational colleges, both Protestant and Catholic, are similarly important in American education, both historically and as examples of significant values, regardless of numbers.

We did not deliberately set out to obtain a sample of college environments in the pure probability definition of the term sample. We did obtain, however, CUES scores from a great variety of institutions across the country. From this variety we selected ones which we believedwould represent both the diversity of American education and the importance of various segments of American education. The result is not a national sample; it is a national baseline. It is composed of major categories of institutions, with representative examples in each category. This approach is analogous to the Dow-Jones average for the stock market--which consists of rationally chosen categories of investment important to the economy, such as rails, utilities, industrials, etc., with selected examples in each category. Thus, in our own studies of college environments, we decided, from previous research and personal judgment about higher education in the United States, that there were important and distinguishable categories of colleges and universities which should be included in a national baseline, and we selected examples in these categories. For educational and social reasons we regard the concept of a national baseline or reference group as preferable to the concept of a sample.

What Is Characteristic of an Environment?

This question goes to the heart of the rationale for scoring and interpreting CUES. The answer requires one to distinguish clearly between the opinion polling or collective perception rationale of CUES and the more familiar individual differences rationale of educational and psychological testing; and to understand that what is being measured by CUES is the environment not the students. Some researchers who have used CUES, perhaps because they are uncomfortable without such familiar artifacts of the psychometric profession as means, sigmas, and t-tests, have proceeded to "score" CUES as they would score most other tests--namely, to count the number of items each person answers correctly, to make a distribution of their individual answers, to compute a mean of this distribution as a measure of the environmental press of the school, and to use the sigma of the distribution in estimating the reliability of the score. The results one gets from this manner of using CUES are not comparable to the results one gets from using CUES as it was meant to be used. If, to each of the 20 items in a scale, half of the students answered "true" and half answered "false," the mean score would be 10. But, following the rationale of CUES, the institutional score would be zero, because there is no real consensus nor any dominant collective perception about any of the items. In our use of the word "characteristic" we mean "dominant," not "average." We mean something that stands out, that is widely shared or seen or felt. A 50-50 split simply means that the condition or event or behavior is not characteristic, is not collectively perceived with any high degree of consensus.

The unit for scoring CUES is the item, not the individual. Does this item describe a condition or event or practice which is characteristic of the institution in the sense that the vast majority of reporters who live in the environment recognize it as true about the environment? If it does, then it is a potential stimulus for some sort of adaptive response. The number of such characteristics, or potential stimuli, all falling along a single dimension such as Scholarship, indicates the degree to which the institution exerts a "press" or stimulus in the direction of Scholarship. The result is a count of dominant collective perceptions, not an average of individual perceptions, an institutional score that is quite different in meaning and in educational significance from an average of individual scores.

We have retained, and extended, this rationale in the revised edition of CUES.

What Is a Reliable Score?

Since a CUES score is not an average of individual scores, it is not possible to estimate its reliability in the typical manner used with most educational tests. But one can plot a distribution of CUES scores for 100 institutions, as we have done, compute the variance of this distribution, and arrive at a K-R reliability estimate. This is the reliability with which the test discriminates between institutions.

The reliability of the score of a single institution is a function of two conditions: (1) the size of the sample on which it is based, and (2) the number of items falling close to the 66/33 borderline of being counted or not counted in the score. Basically, then, the stability or confidence that can be attached to a single score depends on how many items come close to being counted or not counted. From inspecting item percentages for hundreds of schools, we know that it is very rare to find a situation where there are four or five items with percentages just above 66 but none just below 66, or vice versa. Unless one finds this sort of imbalance, the score is likely to be stable. Moreover, scores obtained from different groups of reporters at the same institution are very similar, rarely differing by more than three or four points on the 30-item scales in the published edition of CUES. Furthermore, the meaning of scores is very stable over time. When scores obtained from comparable samples of students at the same institution, separated in time by one or two years, have been compared we have rarely found differences greater than two or three points; and, whichever score is higher, the higher score has consisted of the same items that accounted for the lower score, plus one or more new items.

If one tries to compute the reliability of individual scores, one gets a very peculiar result, and for good reason. The only way to get high reliability, by the usual methods which depend on the variance of scores, is to have a high variance. Thus, by this procedure at a single institution, a high so-called reliability means simply that there is little consensus; but a low so-called reliability may mean that there is a great deal of consensus. Within an institution it is precisely the existence of consensus which makes a CUES score truely reliable, and therefore makes reliability estimates based on variance totally inappropriate and erroneous.

Similarity and Diversity in College Environments

The magnitude of differences between college environments is impressive. The fact that large differences exist is unassailable, but many who write about higher education appear to ignore it or to mention it in passing without understanding it. One cannot describe or rank colleges along some single dimension--such as intellectuality or scholarship--if one really understands the diversity and complexity of higher education in the United States. Not one dimension but many dimensions are required if one is to do justice to the facts. Moreover, the fact that many dimensions are needed means that many combinations will be found. Schools that are quite similar in several respects may be quite different in another.

CUES certainly does not measure all the important ways that college environments differ from one another, nor does it measure the many ways that sub-environments within a single campus differ from one another. CUES does, however, give national perspective to the study of college environments along five broad dimensions, all of which have obvious relevance and validity for the understanding of higher education. For the individual college it also provides self-knowledge about 150 specific aspects of the local environment. For the researcher it enables the differential effects of college education to be related to different characteristics of the college environment. Using an instrument similar to CUES, the present writer (17) demonstrated that students' attainment of various objectives was definitely related to relevant aspects of environmental press, and also that these relationships were much stronger between colleges than between subgroups within a given college. Across a national assortment of colleges, the differences between institutional environments are much greater than the differences between various subenvironments within a particular college.

Since the choice of a college does make a difference in what happens to the student, it is important for students to know what they are choosing, if they have a choice. Unfortunately, the impressions which high school seniors have about what college is like add up to a national stereotype undifferentiated with respect to specific colleges. Even entering freshmen, having already arrived on the campus, have a pattern of expectations which is generally similar, regardless of the college they have been admitted to. High Scholarship, high Awareness, and high Community are common expectations--whether it is a junior college, a State college, a private university, or a liberal arts college. The national data now available from CUES can be used to give high school students, their parents, and their counselors much better information about what college is really like. A method for providing this information has been recommended to the College Entrance Examination Board.

Although the national picture of college environments reveals great diversity, the classification of colleges into the eight types which have been developed and confirmed in the present study, offers practical guidelines in the choice of a particular type of college. There is some unity within the national diversity. Except for the General Liberal Arts colleges, the range of scores within a type is less than half as great as the range of scores in the total national group of 100 colleges. Within many of the types, and on several of the scales, the range is only one-third the size of the total range. Given this narrower range, the prospective student knows, with reasonable helpfulness, what to expect. The information can, in fact, be presented to him by specific CUES items. For example, the probability that it will be important socially to belong to the right club or group is 60 per cent at General Universities, but only 14 per cent at highly Selective Liberal Arts colleges. The opportunity to make this kind of information available is now possible because of the present study.

Some Comments on the "Image" Approach to Measurement

There have been several criticisms of the "image" approach to characterizing college environments. It is said that what students think is true may not really be true, that this perception may simply reflect a stereotype or halo. It is said that the truth or falsity of many items in CUES can not be verified by independent observation. And it is said that perception is not really a stimulus and thus may not have much impact on students' behavior. None of these criticisms have any real substance, but we shall comment briefly on them.

People who have a widely shared experience, and report its nature with a high degree of consistency, are reporting the truth as they have seen it, not a fantasy. High agreement does not constitute a stereotype or halo. The only halo obtained from CUES comes from high school seniors and entering freshmen who have not yet experienced the college environment they are trying to describe. After they have been in the environment for a year or more, the halo no longer exists. There is no evidence that the ethos of a campus is imaginary.

Not all judgments or opinions can be verified by independent observation, but this does not make them invalid. If the mayor says that New York is a "fun city," we may question his judgment; but if all the people who live in New York say it is a "fun city," who is left to say they are wrong? The total universe of people, New Yorkers, provides the ultimate validation. The collective judgment is the fact. Some judgment-type items can be checked against other information. The statement that "in many classes students have assigned seats" can be checked. We know that schools where students agree, two to one or better, that this statement is true do in fact have some classes where students have assigned seats. We don't know how many is "many." If we actually counted the numbers, all we would have would be a definition of "many." We surely would not find an instance where there were none. Regardless of whether "many" turned out to be one-third or one'fifth, it is still perceived as "many" and the feeling expressed is still valid in its own right. One cannot argue seriously that one indicator is right and another is wrong. In the early history of attitude measurement some researchers, including the present writer, felt that "behavior" should be regarded as the ultimate criterion. But we came to realize that asking different questions produced different answers, each with its own validity. If attitudes and actions do not correlate highly with each other, one might say that attitudes are not very predictive of actions or that actions do not provide a good basis for inferring attitudes.

The question of whether the perceived environment has an impact on students' attainment of relevant objectives has been answered in previous research. It does. Therefore, the perceived environment, in fact, constitutes a stimulus or treatment which makes some outcomes more likely than others. The intensity or strength of the stimulus is defined, for the institution, by the number of stimuli (items in a particular scale) that are characteristic of the college.

The correlational data described in the previous section--relating CUES to various characteristics of students, students' behavior and attitudes, and to other aspects of college environment--are all complementary in the sense that relationships which one would expect to find are found. None of the approaches to describing college environments has produced results that are contrary or opposite to results produced by other approaches. Thus, all approaches benefit from this network of interrelationships. Each approach provides information along some different dimensions, and some overlapping dimensions. In so far as the broad dimensions are similar, the results, regardless of the method, are also broadly congruent. With correlations the size that have been reported, it is fair to say that relevant characteristics of the student body, the frequency of relevant student behavior, relevant variables from the EAT, and other relevant institutional characteristics, can all be predicted from the environmental press measured by CUES with about the same degree of accuracy as college grades can be predicted from SAT scores--i.e., in the general range from the low .30s to the high .60s.

CONCLUSIONS

Prerequisite to any thorough and appropriate study of the psychometric properties of a nationally used test (properties such as item discrimination, item and scale intercorrelations, factorial structure, reliability, construct and concurrent validity, etc.) is the development of a nationally representative set of data upon which to base the analyses. The national data base for the present study has been described and discussed. The conclusions from analyzing the data are presented under four headings: (1) Psychometric properties of the current edition of CUES; (2) Psychometric properties of the proposed revised edition of CUES; (3) Institutional differences and norms; and (4) Validity and other interpretative information.

Psychometric Properties of the Current Edition of CUES

1. The distribution of scores from the national reference group of 100 colleges and universities showed a tendency, on some scales, to bunch toward the lower end of the scale, thereby reducing the potential discriminating power of the test.

2. By using a different scoring procedure--one which takes into account all items about which there is a two to one consensus rather than only those which achieve this level of consensus in the "keyed" direction--the resulting distributions are more symetrical and the scores do not pile up at the lower end. This scoring procedure is called the 66/33 method, to distinguish it from the 66+ method described in the current test manual.

3. Analyses of item characteristics in relation to scores computed by each of the above methods show that the 66/33 method is better in the following respects:
   a. more items correlate .40 or higher with the scale score;
   b. more items have their highest correlation with the score in the scale in which they are located;
   c. the median correlation of items with their own scale is higher;
   d. the median correlation of items in a scale with the items in other scales is lower, indicating greater independence between the scales.

4. Factor analyses of the 150 item test, divided into equivalent thirds for this purpose, produced no significant or interpretable factors other than the same five basic factors which led to

the present structure of the test in the first place.

5. However, both the factor analysis data, and the item discrimination data, showed that there were some items which, if removed, would definitely improve the test.

6. It was decided to improve the test by retaining what seemed to be the best items, reducing its length from five 30-item scales to five 20-item scales, and to use the 66/33 method of scoring instead of the 66+ method of scoring.

Psychometric Properties of the Revised CUES Scales

1. The mean percentages giving the keyed responses (across the sample of 100 institutions) to the retained items all fall between 10 per cent and 90 per cent, with all except five items falling between 20 per cent and 80 per cent. Thus, all items are reasonably "functional" with respect to item difficulty. Similarly, the standard deviations of the distribution of percentages are, all except three, greater than ten points, with 75 having sigmas greater than 15 points.

2. All correlations between an item and its own scale score are .40 or higher.

3. The median correlation of items with their own scale score is higher, for each scale, than previously; and the median correlation of items between scales is, in most cases, lower than previously.

4. The intercorrelation of scale scores is lower, in most cases, than previously.

5. The factor structure is quite clearly defined. Eighty-six per cent of the items have their highest factor loading where they should have them. Although the Practicality scale is factorially the weakest, all items in the Practicality scale correlate .50 or higher with the Practicality score.

6. Reliability of the scales, for the sample of 100 institutions and using K-R 20, is very high: Practicality, .94, Community, .95, Awareness, .96, Propriety, .93, and Scholarship, .95.

7. The distribution of scores for the 100 institutions shows a good spread, with the means being close to the theoretical midpoint, and with large sigmas.

Institutional Differences and Norms

1. The diversity of educational environments in higher education across the country is clearly and thoroughly demonstrated by the present study. Colleges are tremendously different from one another. In one college, for example, all 20 of the items in the Scholarship scale were answered in the keyed direction by a consensus of greater than two to one among the respondents at that college; in another college nearly all of these items were answered with the same high degree of consensus, but in exactly the opposite direction. On all five of the scales one finds that nearly everything characteristic of some institutions is equally uncharacteristic of others.

2. There are clear and substantial differences between the environments of various types of colleges and universities. In some cases the scores of institutions within a type have no overlap with the scores of institutions of another type. On all scales the mean differences are also substantial. The mean score of Teachers Colleges on the Practicality scale is four times larger than the mean score of highly Selective Liberal Arts colleges. The mean score of strongly Denominational colleges on the Community scale is two and a quarter times larger than the mean score of Engineering and Science colleges. The mean score of highly Selective Liberal Arts colleges on the Awareness scale is three and a half times larger than the mean score of Engineering and Science colleges. The mean score of strongly Denominational colleges in the Propriety scale is two and two-thirds times larger than the mean score of highly Selective universities. And on the Scholarship scale, the mean score of highly Selective Liberal Arts colleges is two and a half times larger than the mean score of Teachers Colleges.

3. The grouping of institutions into the eight types described in the present study results in very few deviant cases within any type, that is, institutions which do not clearly fit within the type. Only two of the 40 groupings (eight types on five scales each) had more than one deviant case. Thus, the typology used in devising the national reference group of 100 institutions was substantially validated or confirmed by the subsequent empirical data.

4. Moreover, the range of scores among institutions of a given type is substantially smaller than the range of scores across all 100 institutions. For all but one of the eight types, the typical reduction in range was more than half. For General Liberal Arts colleges, the most diverse group, the reduction was one-third.

5. Each of the eight types of higher institutions has a distinct profile. The most similar profiles are between the General

Liberal Arts colleges and the strongly Denominational colleges, and between the General Universities and the State Colleges. In each of these instances, however, there was still one scale on which the difference was more than 30 percentile points.

Validity and Other Interpretive Information

1. Characteristics of students are, to some extent, congruent with characteristics of the school they attend. Although student characteristics by no means account for the environmental differences between colleges, and are almost completely unrelated to what is perceived to be true about any given campus, there is obviously some selective matching between students and colleges. There is a relationship between the scholastic aptitude of the entering freshmen and the Scholarship press of the college; between the esthetic interests of the entering students and the Awareness press of the college; between the religious interests of students and the Propriety and Community press of the college; and between the masculinity and pragmatic interests of the students and, negatively, the Community and Propriety press of the environment. These, and similar relationships, are generally expressed by correlations in the .40s to .60s.

2. The behavior of students, and various attitudes and values expressed by them in college are also, to some extent, congruent with the environmental press of their campus. Church attendance is related to the Community and Propriety press of the college. Planning to enter graduate school is related negatively to the Practicality, Community and Propriety press and positively to the Scholarship press. Majoring in such fields as social science and humanities is related to the Awareness press; majoring in business is related to the Practicality press; majoring in Education is related to the Practicality and Propriety press; majoring in Engineering is negatively related to the Community press. Feeling a strong emotional attachment to the college is related to its press toward Community and Awareness. Participating in extra-curricular activities is related to the Community press. These and similar attitudes and behaviors have correlations with relevant college press that fall generally in the range of .30s to .50s.

3. The variables measured by the Environmental Assessment Technique (EAT) which, for the most part, are reflections of the proportion of students majoring in various fields, and therefore of the curricular emphasis of the college, have correlations which fall generally in the .30s and .40s with relevant CUES scores. If one takes the collective perception of students as the more direct measure of campus atmosphere, then one must conclude that the

indirect measures derived from the EAT have only a modest relation to the directly perceived characteristics of the campus.

4. Some of the "institutional factors" described by Astin, namely Masculinity, Homogeneity of offerings, and Technical Emphasis, also have only modest relationships to the campus atmosphere perceived by students. Size, however, has a high negative relation to Community. And Affluence (in student talent and financial resources) has high relationship with Scholarship and Practicality, positive with the former and negative with the latter. Other institutional statistics, which are largely reflections of institutional size, such as number of faculty members, number of books in the library, dollars of current income, are negatively correlated with Community and Propriety, generally in the .40s and .50s.

5. The overall network of correlations between CUES scores and other data can be characterized as broadly supportive of associations one might reasonably expect. The conclusion from such associations is that campus atmosphere, as measured by CUES, is a concept buttressed by a good deal of both concurrent and construct validity.

SUMMARY

Differences between college students, and between the student bodies at different campuses, have long been familiar to psychologists and educators; but the systematic study of college environments is a much more recent enterprise. College & University Environment Scales (CUES) was published by Educational Testing Service in the spring of 1963, and its availability has resulted in considerable use by researchers and college administrators. CUES was an outgrowth of the College Characteristics Index, developed jointly by the present writer and George Stern in 1957. CUES consists of half of the items in the 1958 version of the CCI, but its structure and rationale are fundamentally different. Like the CCI, it consists of statements about conditions, events, and practices which might occur in, or be true of, college campuses; but unlike the CCI, the measures provided by CUES are along five dimensions which emerged from factor analytic studies of differences between environments, and the rationale is based on the concept of collective perception about what is characteristic of the campus. The basic dimensions are labeled Practicality, Community, Awareness, Propriety, and Scholarship. Each of these scales consists of 30 items. The score on a scale is the number of items that are characteristic of the particular campus, with characteristic defined as a high level of consensus, two to one or greater, among the reporters. The development of this instrument, together with tentative norms for its interpretation, was described in a Preliminary Technical Manual, published by Educational Testing Service in the fall of 1963. Because the whole notion of measuring the characteristics of environments is an intriguing one, opening up the possibility for new and more rigorous research on the effects of higher education and providing new knowledge about the diversity of educational environments across the country, the quality of an instrument used for such purposes is of particular importance. The present study, Analyses of a National Sample of College Environments, was made in recognition of this importance. Its objectives were to provide a broader baseline of data from which to examine and improve the psychometric adequacy of the measuring instrument, to obtain a wider network of information bearing on the validity of the test and its relationships with other measures in current use, and to document more fully the range and patterns of diversity and similarity that are descriptive of American college and university environments.

In the spring of 1965, when the present study began, CUES data were avaiable from approximately 100 institutions. Through the USOE contract, we issued invitations to 193 colleges and universities to administer CUES to a representative sample of their students. These colleges were ones which had previously been included in studies of students' career plans made in 1961 and 1964 by the National Opinion Research Center. Their inclusion in the present study enabled us to relate a good deal of recent information about the schools and the students to the characteristics of the school environment measured by CUES; and through a data sharing agreement with NORC, we provided NORC with information for their subsequent use in making further analyses of environmental factors influencing students' educational and career plans. Of the 193 institutions invited to use CUES, 124 did so. The total number of student reporters from these 124 schools was 15,286. By adding these data to the CUES reports already on hand, and other reports received during the first part of 1966, we had information from 237 colleges and universities. Since the preliminary CUES manual was developed from a base of only 50 schools, the new base of 237 represented a major improvement.

From this pool of 237 reports we selected 100 insitutions to serve as a national reference group for the subsequent psychometric studies. Various cluster analysis computer programs, designed to identify similarities between institutions in the profiles of their five CUES scores, produced information which led us to identify eight "types" of environments: (1) highly selective liberal arts colleges, (2) highly selective universities--public and private, (3) general liberal arts colleges, (4) general universities--public and private, (5) State colleges and other universities, (6) teachers colleges and others with major emphasis in teacher education, (7) strongly denominational liberal arts colleges--Catholic and Protestant, and (8) institutions with a predominant emphasis in engineering and sciences. To assure maximum diversity and representation, we selected ten institutions of each type, except general liberal arts colleges and general universities which were represented by 20 institutions each. These 100 institutions were further selected so that their resulting distribution was nationally appropriate with respect to level of program, geographic region, and public and private control--with nationally appropriate defined as the number of institutions one should have by level, region, and form of control in a sample midway between being representative of institutions and being representative of enrollments.

The psychometric properties of the current edition of CUES were found to be generally adequate but capable of improvement. All items correlated positively with the score on the scale in which they were located, but some items correlated higher with other scale scores. No definable factors other than the ones represented by the present scales were revealed, thus confirming the basic structure of the test, but nearly a third of the items were not as factorially clear as they ought to be. A scoring system which included all items about which there was a consensus of two to one or greater, both in the keyed direction and in the opposite direction, was shown to be better than the present system of counting only consensus in the keyed direction. As a result of these studies it was decided to adopt the new scoring system and to try to improve the test, psychometrically, by eliminating the least satisfactory items.

The revised test consists of five 20-item scales. Studies of this test, using the modified scoring system, revealed that significant improvements were produced. All items correlated .40 or higher with the score on the scale in which they were located. All except two items had their highest correlation with the correct scale. The patterns of item and scale intercorrelations indicated that greater independence between most scales was now the case. Factor analyses revealed a much higher clarity in each of the five factors. In the revised test 86 per cent of the items had their highest factor loadings exactly where they should have them, compared with 68 per cent in the unrevised test. The Practicality factor was the least satisfactory, accounting for seven of the fourteen imperfectly located items, but all items in the revised Practicality scale correlated .50 or higher with the scale score. The reliabilities of the revised scales, based on the distribution of responses across the national reference group of 100 institutions, and using Kuder-Richardson Formula No. 20, were as follows: Practicality, .94; Community, .95; Awareness, .96; Propriety, .93; and Scholarship, .95.

Based on these shorter and better scales, the scores of the 100 institutions were plotted and grouped into the eight types of institutions previously described. The diversity of educational environments across the country is strikingly obvious. On all five of the scales one finds that nearly everything characteristic of some institutions is equally uncharacteristic of others. Moreover, there are large differences between many of the institutional types. The highest mean scores of the institutions within a given type are from two and one-fourth to four times higher than the mean score of institutions within another type. In many cases there is no overlap in the scores of institutions of different types. In most of the types, the range of scores between the highest and lowest case is less than half the range of scores across the total group of 100 schools. An indication of the validity of the typology is the fact that there were very few deviant cases, that is, cases in which a score was noticeably different from other scores within the type. In all, only five per cent of the scores could be classified as deviant, twenty-five scores out of a total of 500. Of the 40 groupings (eight types on five scales), 18 had no deviant case, and only two had more than one deviant case. Profiles based on the mean scores for institutions within each type showed that each type of school had a distinctly different pattern of environmental press. Thus, within the great diversity of college environments across the country there are patterns of similarity, a fact which had definite practical utility for aiding parents, counselors, and prospective students in the process of college choice.

Correlations between measures of the college environment from CUES and other relevant measures--such as the characteristics of students, the behavior and attitudes of students, the curricular emphasis in the college program, and various institutional features such as size, selectivity, financial resources, etc.--are all supportive of associations one might reasonably expect. Whether the environment is characterized directly by the collective perceptions of the students who live in it, or whether it is inferred from student behavior, student characteristics, the emphasis in the college curriculum, or other features such as size, selectivity, financial resources, the results are generally congruent. Different approaches and different questions produce somewhat different answers; but no approach produces answers which are opposite or contrary to those produced by other methods. Thus, all approaches or methods benefit from the network of correlations reported in the present study. In general, scores on CUES correlate with other relevant variables to about the same degree as scores on the Scholastic Aptitude Test correlate with college grades--namely, from the low .30s to the high .60s. The conclusion from such associations is that campus atmosphere, as measured by CUES, is a concept butressed by substantial evidence of both concurrent and construct validity.

In the revised edition of CUES, the basic scales of 20 items each, together with the normative and validity data described above, will be supplemented by ten additional items in each scale. These were tried out in a few colleges during the present study, and their inclusion in a new published version of CUES will lay the groundwork for the continuous revision and up-dating of the instrument.

The end results of the present study are a more reliable and psychometrically adequate instrument, an improved scoring system, a new type of national baseline for studying college environments, a richer documentation of the facts of institutional diversity, a new typology of institutions which has practical value for college admissions decisions, and an expanded network of correlations between various measures of college environments and student characteristics and behavior which indicate that different methods of describing environments produce broadly congruent results, thus strengthening the case for the validity of CUES as a measuring instrument.

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APPENDIX A

UNIVERSITY OF CALIFORNIA, LOS ANGELES

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DEPARTMENT OF EDUCATION
LOS ANGELES, CALIFORNIA 90024

I am writing to invite your participation in a research project being conducted under my direction at UCLA in collaboration with the Educational Testing Service, Princeton, New Jersey, and the National Opinion Research Center, University of Chicago.

The study involves collecting data from a national sample of colleges and universities. These institutions, approximately 200 of them, are ones in which graduating seniors in 1961 or in 1964 were previously questioned about their career plans by the National Opinion Research Center. The data I am now requesting from these same institutions will be used, in part, to enrich our understanding of factors in the college environment which seem to have had some influence on students' career choices and educational plans. The data will also be used to document more fully the diversity, the similarities, and the uniqueness of college environments across the country.

Over the past three years, an opinion poll type of instrument called College & University Environment Scales (CUES) has been used by 100 or so colleges. For the present research study, I am asking that this instrument be given to a group of students at your campus. If you or someone on your campus will agree to do this, copies of the test, together with answer sheets and a manual of instructions, will be sent to you. After the students have taken the test, you will mail the answer sheets to Educational Testing Service where the results will be tabulated and reported back to you. The test materials and the subsequent report of results will be provided at no cost to you. In addition, there will be an honorarium of   to the person who assumes responsibility for administering the tests at your campus.

I hope very much that you, or someone whom you will invite, will agree to participate in this research. The enclosure gives more information about the test and its administration.

There is also enclosed an acceptance order form. If you will fill this out and mail it to Educational Testing Service, you will receive, promptly, the number of CUES booklets and answer sheets designated for your campus. If you cannot accept this invitation now, because no one on your campus is able to administer the test before the end of the school year, I would appreciate your letting me know. Perhaps, in some cases, an arrangement can be made for your participation soon after school opens next fall.

Sincerely,

C. Robert Pace

C. Robert Pace
Director, Higher Education
Research Project

Enc.

Information about CUES and its Administration for The National Study of College Environments

College & University Environment Scales (CUES) contains 150 statements about college life -- events, conditions, policies, procedures, activities, interests, etc. Students mark each statement true or false depending on whether, in their experience, they believe it to be generally characteristic or not characteristic of their college. The responses are added together to show what percentage of the students regard each statement as generally true. Those statements about which a substantial majority agree (by a ratio of 2 to 1 or better) are regarded as "characteristic" of the college, as the students perceive it.

Each college will receive a tabulation of its own results. These results are also summarized in five overall scores, providing a profile of the institution's characteristics along each of the following dimensions: 1) scholarship -- intellectuality, and academic discipline, 2) awareness -- of personal identity, esthetic sensitivity, and social issues, 3) community -- a friendly, congenial, supportive atmosphere, 4) propriety -- mannerly and considerate as compared to rebellious and non-conformist, and 5) practicality -- concern for practical benefits and personal status.

Although there is no time limit on the test, most students will be able to complete it in 20 to 30 minutes.

STUDENTS TO BE TESTED

The first requirement here is that they be qualified reporters in the sense of having been on the campus long enough to be reasonably well acquainted with its features. Full-time students who have been on the campus at least three semesters or more are considered to be qualified reporters. In other words, any representative group of undergraduate students (excluding freshmen, recent transfers, and part-time students) may be tested.

The second requirement is that the students be reasonably representative of the student body -- for example, both men and women on coed campuses, students from several major divisions or schools on complex university campuses. Suggestions for getting together easily a suitable representative group of reporters will be sent with the test materials.

The third requirement concerns the number of students to be tested. This is related to the size of your institution. The number of tests and answer sheets you will receive is indicated on the enclosed acceptance order blank. We hope you will be able to use all or nearly all of these tests, and that, in any event, you will succeed in getting at least 2/3 or so of them used. The test can be administered to students in a group, or sent to students individually, whichever is more convenient for your particular campus. Full instructions for administering the test will be sent to each participating college.

USES OF THE RESULTS

At many colleges where CUES have been used, the results have provided a stimulus to self-study, with faculty members, administrators, and sometimes students considering the actual profile of the campus in relation to what might be regarded as an ideal environment. In other colleges CUES have been used in local research studies, providing a description of the environment within which student attainment and adaptation may be viewed in new perspectives. The test manual reports tentative norms against which the characteristics of your college may be compared. Colleges which participate in the present research study may keep the CUES test booklets for whatever further use they wish to make of them.

SUMMARY OF AGREEMENT

Your participation in this national study of college environments involves the following agreements:

1. To administer CUES at your campus before the end of the current school year. The number of tests you will receive is . You will use as many of these as you can; but in any case will agree to get responses from not less than students.

2. To administer these tests to a reasonably representative group of students; and to report briefly how the students were selected and the conditions under which they were tested.

3. To send all completed answer sheets to ETS for scoring.

In return for your cooperation you will be provided with the following:

1. All necessary materials and instructions.

2. A full report of the results at your institution.

3. An honorarium of for your services.

ORDER AND AGREEMENT FORM

The National Study of College Environments

AGREEMENT:

We agree to administer the College & University Environment Scales under the procedures specified, and to return all completed answer sheets to the Educational Testing Service for processing. It is understood that the undersigned will receive a complete report of the analyses for this institution, for whatever uses it may serve. It is further understood that data will be employed by the National Opinion Research Center, ETS, and the Project director, Dr. Pace, for research purposes only and that no published reports will identify the results at any specific institution without prior approval.

______________________________ (Name and Title)

______________________________ (Signature)

SHIPPING ORDER:

Please ship, to the person designated below, _______ CUES booklets and answer sheets, together with manual and instructions for administering.

______________________________ (name)

______________________________ (position)

______________________________ (institution)

______________________________ (address)

We anticipate return of answer sheets for scoring approximately __________ (date)

NOTE: THIS FORM SHOULD BE RETURNED DIRECTLY TO:

Office of Special Tests (807-5)
Educational Testing Service
Princeton, N.J.

THE NATIONAL STUDY OF COLLEGE ENVIRONMENTS (CUES-807-5)

Unit Control Sheet

NOTE: This sheet _must_ be returned with answer sheets for scoring. All answer sheets from a particular institution will be combined to provide one roster of institutional scores. Therefore, all answer sheets should be packaged together with this form on top. (If it is necessary to break a _set_ into several packages for shipment, note this fact below in the appropriate space; but, only one of these packages should contain this form.)

Instructions for the Test Administrator:

1. Complete all items preceded by an asterisk (*) below.
2. Mail the answer sheets with this Unit Control Sheet to:

Receipts Processing (P/J #807-05)
Educational Testing Service
Princeton, New Jersey 08540

---

* How was the sample of students selected? Under what conditions were the tests administered? (e.g. "All students in five sections of a required sophomore course were tested in class." "A copy of the test, with covering letter, was sent to every _n_th name from a roster of seniors." Etc.)

____

____

____

* Date of Test Administration ____________
* Number of Answer Sheets returned herewith _____
* Number of packages used for mailing this group of answer sheets ____
* Name and address of person at this institution to whom score report is to be sent:

____

____

____

(Note: Costs of scoring and reporting will be borne by the National Study of College Environments. No billing will be made to the institution, except in those cases where answer sheets over the number authorized by the project are included. In such cases, a purchase order for the excess at the rate of $.60 per answer sheet should be attached.)

ETS USE ONLY

____________________ Unit Number
____________________ Batch Number
____________________ Number of answer sheets received (see client count above)
____________________ Number of answer sheets scored and reported

---

APPENDIX B

CUES Items Included in the New 20-Item Scales

Practicality	Community	Awareness	Propriety	Scholarship
2	1	4	61	16 F
7	32	47	63	17
8	34 F	50	65 F	21 F
10	35	54	66 F	22
11	36	56	70	23
12	40	57	71	24
14	42	58	72 F	27 F
18	43	59	73 F	28 F
77	44	60	75 F	29
78	45	62	136 F	30
79	107	122 F	137 F	92
80	108 F	123	139 F	95
81	110	124	141 F	96
83	111	127	142 F	98
84	114	130 F	145 F	99
85 F	115	131	146 F	100
86	117 F	132	147	101
87	119	133	148	104 F
88	138	134	149 F	105
90	144	135	150	121

New Items To Be Included--Revised CUES

Practicality

Most people are aware of the financial status of students' families.

Student organizations are required to have a faculty adviser.

There are good facilities for learning vocationally useful skills and techniques.

There is a well-organized and effective job placement office for the graduating students.

Vocational guidance is a main activity of the counseling office.

Most faculty members really know the regulations and requirements that apply to student programs.

Many faculty members are involved in services or consulting activities for outside groups--business, adult education, etc.

The vocational value of many courses is emphasized.

Professors will often increase a student's grade if they think he has worked especially hard and conscientiously.

Most students want to get a degree because of its economic value.

Community

The campus design, architecture, and landscaping suggest a friendly atmosphere.

Counseling and guidance services are really personal, patient, and helpful.

There are courses or voluntary seminars that deal with problems of marriage and the family.

There are courses which involve students in activities with groups or agencies in the local community.

There are courses or voluntary seminars that deal with problems of social adjustment.

In most classes the atmosphere is very friendly.

Student groups often meet in faculty members' homes.

Most of the students here are pretty happy.

Most students seem to have a genuine affection for this school.

Groups of students from the college often get together for parties or visits during holidays.

New Items To Be Included--Revised CUES (continued)

Awareness

Students are free to cut classes at their own discretion.

There is a regular place on the campus where students can make speeches about controversial issues.

Many faculty members have worked overseas or frequently traveled to other countries.

There is a lot of variety and innovation in the way many courses are taught.

Many professors permit, and sometimes welcome, class discussion of materials that are outside their field of specialization.

Many student groups invite faculty members to lead special discussions.

Student chorus, orchestra, and theater groups are really excellent.

Many students are interested in joining the Peace Corps or are planning, somehow, to spend time in another part of the world.

Groups of students sometimes spend all evening listening to classical records.

Students like to browse in book stores.

Propriety

Nearby churches have an active interest in counseling and youth programs.

The Dean of Students office is mainly concerned with disciplinary matters.

Faculty members are always polite and proper in their relations with students.

Faculty members always wear coats and ties on the campus.

Most professors think of themselves as no different from other adults in the community.

Proper standards and ideals are emphasized in many courses.

A major aim of this institution is to produce cultivated men and women.

In literature, drama, and music the main emphasis is on the classics.

Many professors require students to submit an outline before writing a term paper or report.

New Items To Be Included--Revised CUES (continued)

In most exams the emphasis is on knowing the correct answers rather than on being able to defend a point of view.

Scholarship

New ideas and theories are encouraged and vigorously debated.

Excellence in scholarship is the dominant feature of this institution.

Students who don't make passing grade are quickly dropped from school.

Students are allowed to help themselves to books in the library stacks.

There are lots of quiet and comfortable places for students to study.

The library is one of the outstanding facilities on the campus.

There are many excellent facilities for research on this campus.

The main emphasis in most departmental clubs is to promote interest and scholarship in the field.

Even in social groups students are more likely to talk about their studies than about other things.

Most students are pretty dissatisfied if they make less than a B grade.